

**Factors involved in women's atypical career choice:  
A comparative study of women in East and West  
Germany before and after reunification**

**Verona Elaine Christmas**

**Institute of Education**

**University of London**

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## **Abstract**

The current increase in the numbers of women active in the labour markets of Europe has not ensured equality between male and female workers or resulted in any significant reduction in labour market gender segregation. Factors suggested by the literature as involved in women's atypical career choice (i.e. occupations where concentrations of women are 30% or less) are investigated in four contexts, the former German Democratic Republic and the former Federal Republic of Germany, and the two regions after German reunification. Following the hypothesis that the functionality of factors influencing the typicality of women's career choices are dominated by the context (external factors) in which the choices are made, three levels of investigation are undertaken. First, national aggregated data are analysed to establish the extent of labour market gender segregation in East and West Germany before and after reunification. Second, using a large sample of 17 to 29 year old women from East and West Germany, a causal model of personal and micro-contextual (internal) factors deemed by the literature as being involved in women's atypical career choice is tested against data from two cross-sectional databases gathered immediately after German reunification and again six years later. Finally, the accounts of 93 women currently engaged in atypical careers in East and West Germany are analysed. Based on the women's accounts, a typology of atypical career choice is developed. Findings show that the motives for, and modes of entry into atypical careers is varied and strongly dependent on context (external factors). It was also found that atypical career choices made later in life reflect different motives and modes of entry, and reflect a strong increase in the effect of chance. Other findings indicate that women are not primarily motivated by the atypicality of the work but by particular attributes of the work in question.

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## **Introduction: Factors involved in women's atypical career choice: A comparative study of women in East and West Germany before and after reunification**

One of the most striking social developments seen across Europe during the latter half of the 20<sup>th</sup> century was an increase in the number of women, particularly married women, engaged in economic production outside of the home. While the average increase across Western Europe between 1970 and 1995 was just over 10%, in some countries the increase was much greater. For example, in Britain, although the number of men working full-time between 1984 and 1994 decreased by 3%, the number of women working full-time rose by 13%, so that in 1994 there were one and a half million more women working either full or part-time than there had been a decade earlier (Church, 1995). By 1995, almost half of all workers were women (49.6% – Employment Gazette, April 1996), and in approximately one third of all local labour markets they formed the majority (Walby, 1997). Further, the increase in women's labour market activity and the decline of men's has continued into this century, so that, according to the 2001 Labour Force Survey (Low Pay Unit, 2002) the employment rate for women is now 69.3% for women, compared to 79.3% for men. Similar trends have also been seen in America where the numbers of women in paid employment rose from 5.3 million in 1900 to 63 million in 1997 (that is from constituting 18% of the labour force in 1900 to 46% in 1997). Indeed, whereas in early research into women's careers the category representing women who had never worked outside the home was always one of the largest groups, it is now almost redundant: For example, in the US, it is estimated that 99 out of every 100 women will work for pay at some time in their lives (U.S. Dept. of Labor, 1998).



This rise, however, has to be put in context. First, the work of Hakim (1985, 1993a) has shown that much of women's work in the 19th century was discounted by Census enumerators, so that earlier reported rates for women working in Britain were underestimated: By her calculations the economic activity rate for women between 1851 and 1871 was as high as that of women between 1951 and 1971. This argument is supported by the high percentage of women who work part-time: In the UK, almost half of all women employees do not work full-time (44% in 2001, Equal Opportunities Commission) and in the US, 70% of part time workers are women, as are most workers classed as 'non-standard', i.e., those not holding regular, full-time jobs, (AFL-CIO, 1997). Thus Hakim (1993) claims that, for a true comparison of the increase in women's participation, the overall number of hours worked by women, rather than the number of working women per se, should be calculated. Certainly, claims that women are now approaching equality with males in the labour market based on the numbers of women in employment are misleading.

The point made here, however, is that in 19<sup>th</sup> and early 20<sup>th</sup> centuries, in countries such as Britain and the US, the rise of the middle classes and the growing numbers of affluent working class families modelling themselves on the middle classes, meant that it was socially unacceptable<sup>1</sup> (and in some areas, legally impossible<sup>2</sup>) for married women to engage in paid employment - particularly for women with young children<sup>3</sup>. (This was also supported by trade unions negotiating wage deals based on the concept of men having to earn a 'living wage', i.e. one sufficient to support a family, which effectively discouraged the employment of women.) It is the change from this state, particularly concerning married women of all classes engaging in paid

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<sup>1</sup> See Goldthorpe et al, 1969; Clifford, 1982.

<sup>2</sup> In the UK a marriage bar existed for many occupations (primarily those under government control) whereby women automatically lost their jobs on marriage. Officially this was lifted in 1946.

employment outside the home, whether part- or full-time, which is of importance to this work.

Many reasons for the increase in women entering paid employment have been given, but the following have undoubtedly been major factors: an increase in women's access to, and participation in, education - especially to higher levels; the extension of suffrage to include women; the development and advance of the second wave of the women's movement and the passing of Equal Opportunity laws; the development of reliable female contraception; the application of technology to household appliances; a rise in social expectations with regard to living standards; and changes in the labour market associated with post-industrialisation. Whilst these developments have facilitated women's entry into paid work, Haller and Hoellinger (1994) suggest that there are two reasons underlying why women seek employment outside of the home:

- a) Economic necessity; women's wages contribute significantly to household income so that participation is motivated by economic-instrumental considerations related to familial socio-economic standing.
- b) Self-actualisation, to achieve independence and self-identity; having their own income increases independence (Wolf, 1945; Millett, 1977; Bebel 1988) and has beneficial effects on self-esteem.

Haller and Hoellinger also link this categorisation to a country's economic development, so that in countries with highly developed economies women are more likely to work through a desire for equal social identity, whereas in countries with less well developed economies women are more likely to work through sheer economic necessity. However, this is a rather simplistic categorisation: First of all, the extent of women's participation in the labour market is not related to the equalisation of attitudes

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<sup>3</sup> For example, in 1950 in the USA, the sole occupation of almost 90% of married women with preschool



to gender roles within society, as in the case of Hungary, which has one of the highest participation rates for women in Europe (46% in 1996 – Neft & Levine, 1997) but still has a very traditional attitude towards the role of women, while the Netherlands conversely has one of the lowest participation rates (38% in 1996 – Neft & Levine, 1997) but very modern attitudes towards women. In addition, these are not mutually exclusive categories for in many countries with well developed, tertiary economies (such as Britain, Germany and the USA) there are both women who work to achieve equal social identity and women who have to work through sheer economic necessity. Further, even when women work primarily for economic reasons, a need for independence and enhanced self-identity may also be satisfied (Haller & Hoellinger, 1994).

Continuing this point, women in the former East European communist countries, such as East Germany, also did not conform to Haller and Hoellinger's categorisations. Communist ideology, and its transference into practice through the building of a socialist state, involved the concept of equality for all, including the right to work and most noticeably (at least from a theoretical standpoint) the equality of women within society<sup>4</sup> (see also Engels, [1884] 1972). The State's requirements, although strongly ideological, were also practical. Methods of production were highly labour intensive and the reduction in the adult male population due to the second world war made women's work even more important: At the same time, wages were low so that all adults in a family needed to be wage earners. Women in these countries, therefore, worked not just through financial necessity and for a social identity but also through ideological pressure from the state for all citizens to contribute to the collective good.

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children was the management of the household (Hayghe, 1986).

<sup>4</sup> "....the real point aimed at is to do away with the status of women as mere instruments of production" i.e. unpaid domestic service (Communist Party Manifesto, Marx & Engels, 1848).

However, although the reasons underpinning why women work is an important element in the debate concerning women's career<sup>5</sup> choice, it is not the main focus of this study. Of interest here is why women work where they do, for despite increasing numbers of women in the labour market, the overwhelming majority of women are still to be found working in a narrow range of stereotypical occupational areas, and to be grouped primarily in the lower strata of all areas where they work (the so-called 'glass ceiling' effect), even in those areas which are almost the exclusive preserve of women. For example, within the British education system, although 77% of the full-time primary teaching strength in 1976 was female, women held only 43% of headships (Crompton, 1992) and, following the 'law of growing disproportion'<sup>6</sup> (Putnam, 1976) despite almost equal numbers of female students participating in higher education, female full professors are still rare: In 1999, only 8.5% professors were women, and of all women academics, only 2% had achieved that status (MacLeod, 2001).

Any possible advantages or disadvantages of gender segregation per se, i.e., of women working separately from men, is also not open for debate here. What is pertinent, is that what is typically considered to be 'women's work', or rather the type of work the majority of women engage in, seems to be treated 'de rigueur' as inferior to that performed by men, attracting less pay and fringe benefits (such as overtime and training), and frequently considered as less skilled - even where similar levels of training and/or responsibility are involved (Jenson, 1989). In this way, working in areas labelled as 'women's' can be seen to be less advantageous so that it evokes the intriguing question of why, despite education programmes such as the UK's Technical and Vocational Education Initiative (TVEI) of the 1980's (which put millions of pounds into

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<sup>5</sup> Career is taken to be, "...any sequence of jobs held over the life-time, horizontal as well as vertical" (Scott and Burchell, 1994 p121).

<sup>6</sup> Whereby, the higher and more attractive the position, the lower the representational share of disadvantaged groups.



secondary schools with a principal aim of encouraging more girls into technology) do so many females persist in seeking employment in areas that, at the very least, are financially disadvantaged?

The many theories that have been suggested in relation to the question of women's career choice and labour market gender segregation can be divided roughly into two groups:

1: Those relating to **internal** (psychological) factors: Included here can be theories pertaining to the Nature/Nurture debate - the former positing that women are biologically-oriented to occupations involving caring and nurturing, and that differences in gender preferences for certain types of work are 'natural' - the latter holding that socialisation during formative years reproduces traditional gender stereotypes so that women choose to work in areas which conform to these conventions. Theories of identity development and personality traits linked to career choice can also be subsumed into this group, as can the influence of the family and organisations, such as schools, on the development of attitudes and values.

2: Those relating to **external** (sociological and economic) factors: Included here are theories related to the effect and influence of social, political and economic systems, especially labour market structures and organisation; employment policies, laws and regulations; cultural stereotypes; and patriarchy (both private and public - Walby, 1997).

Overarching the influence of these individual factors is the concept proposed by scientists, such as Bronfenbrenner (1989), Lerner (1998), and Magnusson and Stattin (1998) that developmental outcomes (such as career choice and the transition from school to work) are the result of dynamic systems interaction whereby there is a constant interchange between the systems that comprise the individual and the systems that comprise the environment (both proximal and distal) within which the individual exists.

In addition, women are not a homogenous group and, when considering labour market segregation and women's career choices, it has to be remembered that some women do 'break the mould' and overcome the vertical and horizontal barriers that seem to hold back the majority from entering non-traditional, or female-atypical occupations. These women, by virtue of being female, must be subject to the same biological influences attributed to sexual identity as all women, and will have been socialised and made their occupational choices within the same macro-social contexts, and within the same structure of opportunity as their more traditionally-oriented peers. The question then becomes, why some and not others? Are these women simply individual, unusual cases or do they have something in common biographically? Or do some political, economic and social contexts provide structures of opportunity that are more favourable for women to make career choices other than those linked to stereotypical female areas of work? In sum, what factors, both internal and external, appear to support atypical career choice?

This work aims to look at these questions and in so doing to add to the debate on the persistent gender segregation of labour markets across Europe. This, it is hoped, will be accomplished by focusing on the subject from three different perspectives: First, by comparing the structure of opportunity for the employment of women presented by two very different political, economic and social systems - those of the former Federal Republic of Germany (FRG) and of the former German Democratic Republic (GDR) prior to and following German reunification. Second, by exploring which factors, both internal and external, may be operative in supporting atypical career choice, and by comparing results across the two regions and across time. And third, by examining the accounts and biographical details of women from each region who work in female-atypical occupations.



## **Chapter 1: Factors underpinning women's career destinations: Research findings from the literature**

The persistence of gender segregation in labour markets, whereby certain occupational areas are deemed to be the domain of women and others the domain of men, “has a history as old as the labor force itself” (Reskin and Roos, 1990) and has been the subject of much empirical research and theoretical formulations. Underlying these empirical investigations into why women work where they do are theories about the origins of the differences between men and women that seem to underpin gendered occupational choices and hence labour market segregation. As was noted in the Introduction, these can be divided into two locations of influence: *internal*, i.e., those relating to an individual, such as self-concept, self-efficacy, self-esteem, ability, achievement motivation, personality traits, values and attitudes; and *external*, i.e. those relating to contextual factors (primarily social and economic -Sharf, 1992) within which career choices are made. Contextual influences can be divided further into micro and macro environments (Bronfenbrenner, 1989; referred to by Super, 1980, as intermediate and remote, respectively): Micro environment includes family, peers, and school; macro environment includes the state and its systems, such as type, state and development of the economy, labour market structures and organisation, labour laws, and broad cultural constructs such as patriarchy and gender-role beliefs.

### **Internal Factors**

How individuals see themselves – their self-concept or perceived identity – is central to career choice, which is itself an expression of identity (Super, 1953; Erikson, 1968). This development of identity, particularly of what it means to be male or female, has been debated throughout history, and from many perspectives. One of the oldest

theories, and one which has recently been revived with developments in genetic research, is that of biological determinism. This holds that differences between men and women in their aptitudes and abilities, and social behaviour, such as gender role attribution, occupational preferences and career v. family orientation, are primarily biologically determined, or at least, biologically rooted i.e., they are determined by nature. The antithesis of biological determinism or 'nature' theory, is that of socialisation. This holds that gender identity and sex role differences are far more a matter of nurture, i.e. that, "socialization shapes both individuals' self-perceptions and their goals and values, [so that] women and men ... acquire different self-concepts, different patterns of expectations for success across various activities, and different values and goals." (Eccles 1994, p599). This leads to the cultivation of 'gender appropriate' attributes, which in turn seem to suit men and women for specific roles and for work in particular occupational areas.

### **Nature or Nurture? Gender differences from the 'nature' perspective**

Explanations couched in theories of natural or biological differences have existed since the days of the Ancient Greeks, when women were seen as incomplete or defective males<sup>7</sup> which set them apart from men, especially in terms of civil rights. As European societies progressively modernised, whilst it cannot be said that all social inequalities could be simply divided along gender lines, it can be said that women were considered as inferior to men (King & Rabil, 1999), did not enjoy the same civil rights, and that

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<sup>7</sup> Plato, in his later writings uses female weakness and inferiority to explain and justify assigning different social roles to women, and Aristotle details the differences whereby women can be seen to be defective males, namely that women are not able to transform their menstrual blood into semen. By this 'defect' women were also seen not to contribute anything formative to the development of the embryo. Galen, in the second century had proposed that the genitalia of women were simply undeveloped male genitalia which had remained internal, while in the Middle Ages, a popular ballad explained that women "are but men turned outside in" (Laqueur, 1990). Juan Huarte, writing in the 16th century (Shields, 1975) explained apparent intellectual, and thus social, differences between men and women as resulting from men having testes and women none! His reasoning was that intelligence required 'dryness of spirit', something which he attributed to the testes.



differences in aptitude and suitability stemming from their biological difference were cited as the underlying cause (Mendelson & Crawford, 1998; Wiesner, 1993). However, it was not until the nineteenth century that the notion of women as irreconcilably different began to emerge. With the rise of industrialisation and a broadening of access to general education and enfranchisement, the denial of women's access to these areas was strongly supported at this time by the Theory of Thermodynamics. This posited that all physical systems, including the human body, followed the principle of energy conservation, whereby energy used for one function could not be available for another. The main proponent of this theory was Dr Edward Clark (1873) and it was used to validate the generally socially accepted idea that women should not be educated beyond anything other than a basic level. It was claimed that if women used their 'body force' on the brain function required for further education, it would, "enfeeble their bodies, ruining their health, and crippling their capacity to bear children" (Lips 1993 p37).

Sigmund Freud's work<sup>8</sup>, which was also linked to biological proclivity, held women as either tending towards the neurotic or the psychotic. Very generally speaking, his theoretical platform was based on a psychological reaction to a biological fact, i.e., a woman's acceptance or non-acceptance of not having a penis. Depending on her reaction, the psycho-physical battle to resolve this fact lead at best to women being naturally passive<sup>9</sup> and tending towards neurosis, with a permanent feeling of inferiority to males, or at worst to being psychotic, but in either case (due to a poorly developed superego) being less moral and less just than men, rendering them incapable of being leaders or shapers of civilisation (Klages, 1997).

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<sup>8</sup> Sigmund Freud (1856-1939) See for example, 'A general introduction to psychoanalysis' 1915-1917, Penguin. For a discussion of the relevance of Freud's theories today, see Westen, 1999.

<sup>9</sup> Although he acknowledged that social customs also played a role in this passivity.

Moving to more recent times, the idea that gender role differences stem from irrevocable biological facts has seen some support from ethological studies and from sociobiologists where the male dominance among higher order primates is used to explain patriarchal behaviour in human society (Smutts, 1995). One reason cited for male dominance in primate and early human environments is that males have much higher levels of testosterone than females, and that testosterone is associated with male aggression and muscular physique. Over time, character traits associated with dominance and muscular strength became synonymous with masculinity, and the converse with femininity (see, for example, Spence & Helmreich, 1974, - the *Personal Attributes Questionnaire* (PAQ); and Bem, 1974, - the *Bem Sex Role Inventory* (BSRI) for measures of masculinity and femininity trait dimensions) and indeed, when these broad personality domains were tested, Spence and Helmreich found that women scored more highly on emotional and kindness traits, while men scored more highly on those reflecting dominance, activity and competitiveness.

In his book, 'The Limits of Family Influence', Rowe (1994) proposes that genetics explain more variance in personality and behaviour than family influences via socialisation, and cites as evidence findings from twins studies by Mitchell, Baker and Jacklin (1989) who found that between 20% and 48% of individual differences on masculinity and femininity trait dimensions in the twins could be accounted for by genetic variation. Rowe adds that, as "masculinity and femininity overlap conceptually with the standard [personality] trait dimensions such as extraversion and agreeableness, respectively" (Rowe, 1994, p170) the findings are hardly surprising. Twin studies conducted by Bouchard (1999) also indicate that heredity has an influence on personality. Continuing this line of reasoning, Rowe suggests that behavioural



differences in males and females<sup>10</sup> occur “..because [males and females] *are* different, not because rearing has made them so” (Rowe, 1994, p169 – author’s italics). However, one important finding from Rowe’s own study (1982) of monozygotic and dizygotic twins was that although genetic influence was found for masculinity traits, a possible influence of rearing was found for femininity.

Twin studies have also been used by researchers (e.g., Pedersen, Plomin, McClearn, & Friberg, 1988; Plomin, McClearn, Nesselroade, & Bergman, 1989; Plomin, 1994; Bouchard, Lykken, McGue, Segal, & Tellegen, 1990; Scarr, 1992) to support the ‘nature’ hypothesis concerning behavioural differences. In general, findings suggest that monozygotic (identical) twins show a much greater similarity in behavioural as well as physical development than do dizygotic (non-identical) twins, irrespective of whether or not the twins have shared a common environment during their development. The conclusion drawn from these findings is that behavioural and cognitive differences in children, previously attributed to environmental variables, such as parenting styles, social class, income and ethnicity, are more likely to be caused by underlying genetic differences.

A biological perspective is also used to explain differences between sexes in general life orientations (Rowe, 1994, citing Churchman, 1984), and to explain within-gender differences of women’s choices concerning work and family.

..the choice of family versus career may reflect inherent biological sex differences that are stronger in some women and weaker (if not absent) in others. Those women who have a strong desire to succeed in careers may not understand or sympathize with women who lack this desire (and vice versa). (Rowe, 1994, p189)

Continuing this line of argument, Rowe suggests that women who seek to exist on a par with males, and are thus “near the masculine tail of the ‘masculinity’ distribution” are

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<sup>10</sup> Linked by socialisationists to gendered differences in parenting behaviour.

disadvantaged in a society that does not accept their “biological proclivity” (Rowe, 1994, p189).

In terms of gender differences in task performance, Professor George Fink, director of the Medical Research Council's brain metabolism unit in Edinburgh reported being certain that differences in behaviour between males and females, “are the result of physical differences in the chemistry and neural circuitry of the brain that are laid down at birth” (Connor, 1997). These differences are said to result in males performing better in target-directed motor skills and in women performing better in precision manual skills; in both sexes using different strategies for orientation (males orientate themselves depending on their own position while females do so by remembering landmarks); in both sexes showing different abilities in spatial tasks (males better at rotating an object in space, females at matching objects); and to males doing better in tests concerning mathematical reasoning while women do better in verbal reasoning. Rowe (1994, citing Benbow, 1988) also sees gender differences in maths performance as biologically based, and Plomin and DeFries (1999) have shown a link between cognitive ability and heritability. Shaywitz and Shaywitz (1995) have also found sex differences in brain function, namely, that males and females use different parts of the brain when undertaking language tests. These differences in brain organisation and operability, however, were not found to translate into gender differences in task outcomes, but such findings have been used to support theories that behavioural differences between males and females are biologically grounded (Connor, 1997).

Biological factors have also been implicated in gender differences in preferences for different types of toys – boys having been found to prefer mechanical toys and gross motor play, and girls to prefer more nurture-related toys, such as dolls and soft toys, and fine motor play, with more personal stimulation. Research in this field has indicated



that biological substrate may exist which encourages these gendered toy preferences in children so that, even though parents may emphasise and encourage sex stereotypes in play activities and home-based activities, this may only be reinforcing already biologically instigated preferences rather than instilling them. For example, in the study by Snow, Jacklin, and Maccoby (1983), which observed fathers interacting with their one year old infants in the presence of potentially hazardous or disastrous objects (such as a jug full of water), although the fathers were seen to be more prohibitive and to intervene more with boy babies, the boys themselves were shown to be much more curious and investigative than the girls, making more spontaneous attempts to touch. Boy babies have also been found to be more active in utero (Valian, 1998).

Another biologically-based difference in the behaviour of men and women, which ultimately impacts on life-course choices, has been proposed by Bjorklund and Kipp (1996). This work hypothesised that, in prehistoric times, mate selection had greater survival implications for women than men<sup>11</sup> so that “different selection pressures on male and female hominids centered around mate selection and childrearing and resulted in domain-specific differences in inhibition” (p180). This required them to inhibit potentially maladaptive emotional, social and sexual responses which, it is suggested, through evolution and over time, has resulted in “enhanced inhibitory abilities in women in some domains” (p163).

Following this hypothesis, Bjorklund and Kipp (1996) examined studies where gender differences in social, behavioural, and cognitive tasks involving inhibition were found. In these studies differences were seen to be greater in favour of women concerning the social domain, less so concerning behavioural domain and insignificant

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<sup>11</sup> Based on the tenets of parental investment theory (Trivers, 1972) different sexual and reproductive strategies are suggested for men and women, in that women are said to have a greater 'investment' in reproduction than males.

concerning cognitive domain. From these findings it was concluded that “contemporary intellectual and behavioral functioning results from pressures to inhibit sexual and aggressive behaviors in hierarchically arranged hominid social groups” (Ibid., p180). The authors alternatively suggest that women excel in social and emotional tasks because they have evolved “to be more attentive to, to gain more satisfaction from, and to be generally more motivated to perform tasks in these realms than men” (Ibid., p182; see also Grusec, Goodnow, & Cohen, 1996; and Saarni, 1984<sup>12</sup>). Although they do propose that other factors such as “motivation, levels of activation, and practice” also make important contributions to the patterns of gender differences observed, and insist that their work “does not preclude an important role of culture on development and behavior, nor does it imply biological determinism” (p183), in reality the findings they present seem to do just that.

One area where a biological factor has been seen to have a direct impact on life planning and career orientation of women is that of pubertal timing. The early onset of puberty, which is both genetically and environmentally influenced (Magnusson & Stattin, 1998) has been positively linked to girls’ future family orientation and adherence to stereotypical gender-role function, which makes it less likely for alternatives, such as a career, to be explored (Katz, 1986; Petersen & Crockett, 1985). The reasoning is that girls who become sexually mature at an early age are subjected to more male peer pressure and heightened parental restrictions than their on-time or late maturing peers. This leads to reduced female peer contact and has been linked to reduced self-esteem, which in turn has been linked to a greater likelihood of a stereotypical attitude to the female role. Interestingly, early pubertal development in

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<sup>12</sup> Saarni, (1984) in an observational study of children's attempts to monitor their expressive behaviour, concluded that gender differences in control of expression, i.e., expressive control, was due to differential socialisation pressing more strongly on girls to be agreeable, despite feeling otherwise.



boys seems to have the opposite effect, leading to increased responsibility, greater freedom, and greater self-esteem through heightened peer group kudos.

Other research has examined this concept under the heading of gender-role intensification whereby, with the onset of puberty, both boys and girls experience an intensification of gender-related expectations from parents, teachers and peers that exerts pressure on the adolescent to conform to gender-typical patterns of adult behaviour (Hill & Lynch, 1983). In this way, girls who enter puberty early (for Western Europe and the US this can be taken to be age 12 or below) are subjected to early gender intensification. This has been shown to result in higher levels of parental monitoring and a distancing from same-age/same-sex peers (Katz, 1986). A change in the mother-daughter relationship, whereby the opinion and intervention strategies of the daughter are more accepted by the mother, has also been recorded for early maturing girls (Weichold, Schmitt-Rodermund & Silbereisen, 2000). Girls who enter puberty early have also been found to be less likely to have a formal academic education, to have significantly higher homemaking orientation, and the raised likelihood of having at least one child by age 26 (Gustafson, Stattin, & Magnusson, 1992). For women, a high homemaking commitment correlates with a reduction in long-range career motivation (Farmer, 1985) and has a determining effect on career choice (Fassinger, 1990).

In sum, theories relating male and female differences in behaviour, attitudes, aptitudes, and abilities to biological differences are many, complex, and often have their roots in antiquity. Recent research findings within the field of genetics and human development have suggested that some fundamental behavioural differences between men and women (such as males being naturally dominant, better at maths and spatial awareness, and more oriented towards things mechanical; and females being more inhibited, less good at maths, verbally skilled, and more person oriented) occur

primarily through genetic influences as well as sex differences in body chemistry and physical make-up. When these findings are viewed in the context of gender differences in career choice and labour market segregation, it can be inferred that differences occur because naturally determined differences in physical and psychological attributes lead men and women to be adapted and more inclined to work in different occupations. In particular, when focusing on women and atypical career choice, it is important to note that gender differences relating to task performance, especially in mathematics, are said by many ‘naturists’ to be biologically determined.

### **Nature or Nurture? Gender differences from the ‘nurture’ perspective**

The other side of the debate is that gender differences in behaviour, attitudes and attributes are the result of socialisation. Socialisation theory, or the nurture hypothesis, has been the subject of debate, particularly amongst feminists, concerning its usefulness in explaining the position of women in society in general, and in the labour market in particular. It should be made clear that the understanding of socialisation theory taken here concerns the deep-rooted transmission and reproduction of stereotypical attitudes that are so embedded in the unconscious belief systems of society they are held to be natural. So much so, in fact, that questioning such fundamentally held beliefs may be seen by both men and women to be radical, and even where evidence against the belief is given or experienced, it may be ignored, as suggested by Festinger’s (1957) Theory of Cognitive Dissonance. In extreme cases, such as may result from social change, or particular social transitions in the life-course, the ‘accentuation principle’ may be invoked whereby there is an “increase in the emphasis or salience of [the] already prominent characteristics” (Elder & Caspi, 1990, p218). In other words, experiences that should lead to a review of existing beliefs and values, may instead result in reinforcement of the questioned belief.



Much of the thinking underpinning socialisation theory is grounded in development theory, which is concerned with understanding one of the most fundamental developmental tasks faced by all human beings, that of the development of self-identity or of a sense of self, that of knowing who we are. In the 19th century, social interactionists such as Charles Horton Cooley (1864-1929) and George Herbert Mead (1863-1931) proposed that the self developed purely in the context of society, and thus saw a positive interaction between the individual and society. Cooley suggested a process of development which he called the 'looking-glass self' whereby self concept is formed in three stages; first, personal actions are judged in terms of how others may see them; second, how others appear to judge these actions is noted; and third, self-judgement, or self-valuation, based on the perceived judgements of others, is established. This led to the theory that how we believe ourselves to be (as measured by the assumed judgement of others) is more important, and thus more influential in the development of the self, than how we really are. This concept of self is known to play a crucial role in life-orientation and life goals.

Mead proposed self concept to be rooted in the social play of children and to be almost fully formed by the time a child is 8 or 9 years old, so that childhood experiences take on a crucial role in its development. Like Cooley, he saw the development of the self as progressing through various stages, including play (where the child imitates the behaviour of others) and culminating in the formulation of role expectations. The child's interaction with both 'significant others' (individuals closest to us and most important in our development), and 'generalised others' (community or society as a whole) is instrumental in the outcome of these various stages.

Whereas Cooley and Mead considered society and the self to be involved in a positive interaction, Freud (see earlier discussion of his work) saw them as opposing

forces, where the individual's natural driving force (the id) was constantly being checked by the superego - i.e., the self as conditioned by society and learned primarily from parents. Mediating between the id and the superego is the ego, the part of the self which tries to find a way of satisfying the id that is also acceptable to the superego. Like Cooley and Mead, however, he perceived early childhood relationships and experiences to form the core of adult personality, which though it may be modified, could not be fundamentally changed.

The work of Erik H. Erikson (1902-1994) took a different stance and set out to show that the forming and development of the self is lifelong and not confined to childhood. He noted the effects of biological transitions and social expectations at eight different stages of life on the development of the self, establishing that we construct the self over time, using the materials provided by society and culture. Daniel Levinson (1920-1994) also hypothesised the existence of predictable stages of development related to specific age periods. From this he constructed a theory of development comprising six stages that show a close association between individuals' development and their position in society at a particular time (Levinson, 1978). However, this work has been strongly criticised because it drew on an all male sample from a similar background, so that the generalizability of the findings is questionable. In particular, as Rosalind Barnett and Grace Baruch (1979) argue, these stages cannot be directly generalised to women: Developments in the lives of women do not follow the same chronologically ordered sequence as that of men because many women experience a variety of roles, which may include full-time participation in the work force, absence linked to childrearing, and part-time work. In sum, work centring on developmental theory sees that social differences in the self-concept, values and life-goals of men and



women are rooted in developmental experiences, especially those of early childhood, and are linked to an individual's interaction with their family and society.

In terms of the influences of socialisation on the individual characteristics that comprise a person's identity, there is a wealth of empirical research that attempts to clarify how the effects might be operationalised. As has been discussed earlier, Rowe and other behavioural geneticists have refuted the extent of environmental influences on children's development, especially those attributed to parents and the family environment, but other research suggests parents have a very marked effect in this area. Even parental attitudes towards their unborn child show that they expect and anticipate differences dependent on the child's sex even before it is born, as can be seen in differences in colour and type of furnishing considered when preparing the nursery (Rheingold & Cook, 1975).

In a study of new parents, Rubin, Provenzano, and Luria (1974) found that within 24 hours of the birth parents used different language, and assigned different attributes to their babies, dependent on its sex; boys were described in terms such as strong, alert, hardy, and well co-ordinated; girls were described as soft, fine featured and delicate. That these differences in parental behaviour to their new-born child are unlikely to be in response to differences in the babies behaviour is supported by the work of Condry and Condry (1976). Parents were shown a videotape of a 9-month-old child, referred to as either David (male) or Dana (female) and asked to describe the child's reactions and behaviour to a variety of situations. The effect of the child's sex was clearly reflected in their descriptions. For example, when explaining reactions to the same emotion-raising stimuli, 'David' was said to be angry, while 'Dana' was said to be frightened. Similarly, other research has shown that parents select toys or play activities according to the perceived sex of the child, and that play will reflect more personal

stimulation when with a girl, whereas it will involve more vigorous gross motor related play if the child is a boy (Will, Self & Datan, 1976; Frisch, 1977; Smith and Lloyd, 1978; Tauber, 1979; Langlois & Downs, 1980). Likewise, parents have been shown to interact with their offspring in different ways linked to gender (Franklin & Rollins, 1983; Rutter, Quinton, & Hill, 1991), the most common differentiation being their encouragement of gender stereotyped activities (Lytton & Romney, 1991; Grusec et al, 1996).

The effect of parental attitudes to gender stereotyping can also go way beyond infancy: Kuebli et al (1994) found that parent/child dialogues differed in style according to gender, namely that they would discuss feelings more readily with girls, whereas boys were often discouraged from the same activity, conveying the message that such conversations were not appropriate for them.

When asked to rate the performance of their sons and/or daughters in a male stereotypical activity such as athletics, parents were more likely to underestimate daughters competencies and overestimate that of their sons (Jacobs, 1991). Perhaps more relevant when considering the typicality of female career choice, this has also been shown to be the case in parental attribution of success in Maths and Physics; parents see their daughters as achieving through effort and hard work; sons, through natural talent (Eccles, Jacob & Harold, 1990; Eccles, 1993). Mathematically gifted girls have also been found to receive less parental encouragement for their achievements (Fox, 1982). Boys are likely to be provided with more opportunities to engage in sports and computing, and girls more opportunities to read and mix with their peers (Eccles, 1994; Eccles, 1993).

A link has been found between parental influence on gender role development and overall achievement-orientation, which is known to be significantly linked to



typical/atypical career choice (Betz & Fitzgerald, 1987, Eccles, 1994). Close contact with the mother has been associated with greater achievement orientation in boys but not in girls. Indeed close affiliation with the mother seems to have the reverse effect for girls, whereas a more ambivalent relationship has been linked to their greater achievement motivation (Lips, 1993). Research has also indicated that the role model of the mother is significant in the career choice of their daughters (Zucherman, 1981) and that as early as pre-school, girls whose mothers were working in non-traditional fields tended to aspire to less gender-stereotypic careers (Selkow 1984). A working mother is also cited by Betz and Fitzgerald (1987) as facilitating women's career development. However, a study by Rocha, Rotterdam, and Trautner (1996) found a high correlation between the choice of gender atypical occupational field and the higher education of parents but less employment of the mother. In Devine's (1993) study of women engineers, the fathers' occupation was found to be a highly significant factor in their career choice. The role of the father in supporting his daughter's career was also found by Betz and Fitzgerald (1987) to be a significant factor in the career orientation of women.

In their meta analysis of differences reported for parents' socialisation of boys and girls, however, Lytton and Romney (1991) found effects to vary across the studies examined, and that overall, for most areas of socialisation, differences were small and often non-significant. Significant differences were, however, shown in the level of physical punishment by parents (greater for boys) but this, the authors suggest, may have been linked to a higher incidence of bad behaviour by boys rather than differences in the punishment of boys per se. There is, though, other evidence to support the notion that parental response to the behaviour of their offspring differs according to gender (Hinde & Stevenson-Hinde, 1987). Rutter et al (1991) suggests that this is because boys and

girls respond differently to stress situations, with boys more likely to show oppositional behaviour and girls to show 'distress', which in turn may trigger different responses in their carers. In general, fathers have been seen to show greater differentiation in their behaviour towards sons and daughters than mothers but this was mainly significant with regard to restrictiveness (Lytton & Romney, 1991).

Nevertheless, studies such as that of Grusec et al (1996) which looked at the assigning of household tasks to children by parents, found that gender-differentiated behaviour by parents was evident. The focus of their research was the extent to which the allocation of household tasks to both boys and girls might affect their socialisation with respect to the spontaneous demonstration of care for others. In the study, the type, direction and frequency of household tasks set for two groups of adolescents, pre to early adolescence and mid-adolescence, were analysed. Tasks were classified as being in support of the general family or in support of self, and by type i.e., tasks seen as routine or those done in response to requests. Few statistically significant differences as a function of age and gender in the kind of work assigned were found, except that girls were reported to be more involved with kitchen related activities, while boys were more likely to be involved in outdoor tasks, such as mowing the lawn (Grusec, et al, 1996). However, age and gender did show an effect when the frequency and type of task were analysed. Here, a significant increase was seen in the extent to which routine family-care work was assigned to girls in mid-adolescence. A similar increase for boys, who were more likely to be assigned 'request' tasks, was not found

Again, these findings could be explained from several viewpoints. When asked to rate their children's spontaneous concern for others, mothers reported girls as showing more concern than boys, so that they might, quite rationally, choose to allocate routine caring tasks to girls. However, as the allocation of such tasks can "serve as a vehicle for



the expression of parental expectations and as an opportunity for children to come to understand those expectations” (Grusec, et al, 1996 p1006) they are an effective vehicle for parents to transmit their own gender-role schemas to their offspring, and for their children to assume them (Crouter, Monke, & McHale, 1995).

The results also, “provide considerable support for the hypothesis that older children who are expected to do household work that benefits members of the family, and who are expected to do it on a routine or self-regulated basis, are more likely to show spontaneous concern for the welfare of others” (Grusec, et al, 1996, p 1004). As the study shows that girls are more likely to be assigned routine tasks associated with the whole family than boys, it suggests that the spontaneous caring effect may be also stronger for girls. The importance of these findings, therefore, is not the quantity of work undertaken but the ownership of the task i.e., in allocating routine tasks, responsibility was shifted to the girls themselves, whereas, in the domain of requested tasks the task is only temporarily transferred, overall responsibility remaining with the task setter. One effect of girls assuming greater responsibility for others, particularly during mid-adolescence, could be that they develop, “a sense of helping others, responsibility for the welfare of others, belief in oneself as a helpful person, a sense of agency or self efficacy, and an appreciation of the needs and feelings for others” (Grusec, et al, 1996, p999). It is not too far-fetched to suppose a correlation between girls who are given responsibility for tasks that lead to the development of skills and attitudes associated with caring for others, and a career choice which matches these skills and attitudes.

Other personality traits, such independence and a willingness to take a stand (Rainey, 1997) valuing independence and self-efficacy<sup>13</sup> (Gustafson, et al, 1992; Betz & Hackett, 1981, 1986) have been found to correlate with women's gender role attitudes and career orientation. Pulkkinen, Ohranen and Tolvanen (1999) found extraversion to be significantly correlated with women's high career orientation, where an extravert character was said to be a social, active, risk-taking optimist who may be prone to aggressiveness (Eysenck, 1967). In general terms, however, males tend to score higher than females on similar traits such as competitiveness and assertiveness (Feingold, 1994). Levels of ambition, in association with ability and feminist orientation, have also been linked to attitudes in females concerning family and career orientation that are instrumental in the career choice of women (Fassinger, 1985). Higher levels of self concept and self esteem have also been found to correlate with women that are career oriented as opposed to family oriented (Tinsley & Faunce, 1980), with higher levels of achievement motivation (Steriker & Johnson, 1977), and particularly to characterise women in atypical careers (Lemkau, 1983). Overall, O'Brien & Fassinger (1993) propose that adolescent women who select non-traditional and prestigious careers have strong agentic characteristics.

In sum, certain individual characteristics pertaining to identity development are influential in women's career orientation and occupational choice, and the development of these characteristics are influenced by socialisation, especially through interaction with 'significant others', particularly immediate family: Parents who hold strong gender-typical attitudes, and consequently present strong gender-typical role-models, may structure the rearing of their children accordingly, which in turn increases the chance of their offspring choosing gender typical occupations and life career patterns.

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<sup>13</sup> Self efficacy is given as, "belief in one's capabilities to organise and execute the courses of action



## External factors

Although personal development and career choice are influenced by internal factors rooted in both nature and nurture they are also dependent on the context i.e., on the micro (or proximal) and macro (or distal) environments, with which an individual's attributes, attitudes, and abilities interact. The result of this interaction between internal and external factors can be said to form an individual's structure of opportunity. This concept of system interaction is defined by Bronfenbrenner in his 'Ecological Systems Theory of Human Development' (1989) whereby an individual's environment, or context, is said to be made up of four levels or sub-systems. Starting with the individual, these are:

- Micro-system, such as family, peers and school i.e., the immediate environment within which a person is operating.
- Meso-system, connections between things within micro systems, such as the interaction between home and school.
- Exo-system, this is a system with which the individual has no immediate interaction, such as a parent's place of work, but which nevertheless has an impact on their immediate environment (bad day at work, shift work etc by a parent can affect happenings in the home).
- Macro-system, the outermost level, such as the State and its systems e.g., type, state and development of the economy, labour market structures and organisation, labour laws, and broad cultural constructs such as patriarchy and gender-role beliefs.

The focus of this concept is that although each of the systems are characterised by particular types of roles, norms and relationships, they interact and are simply part of the whole. In other words, action at the macro level (such as the introduction by law of a new examination system for school leavers), will influence things in the meso level (such as schools), which in turn will have an impact on things at the micro level (such as discussions about the necessity to pass the new examination, and consequences for less free time).

In seeking to explore the possible effects of external factors on women's career choice, the following overview of findings from the literature concentrates on external factors pertaining to the two extreme levels within Bronfenbrenner's Ecological System, i.e., the individual's proximal environment (micro-system) - namely, their home and school- and the individual's distal environment (macro-system)- namely the economy, labour market, and cultural constructs.

### **The Home**

Family background has been referred to as "a cluster of powerful forces – shaping an individual's capacities and accomplishments throughout [their] lifetime ..... [whereby] educational and occupational aspirations are predictable in part from the attainment of [their] parents" (Bachman, 1970, cited in Vondracek, Lerner,& Schulenberg, 1986, p49). Further, an extensive body of literature has shown family-related factors to be influential with regard to vocational intentions (Vondracek et al, 1986), to the timing of expected transitions concerning leaving school, entry into work, marriage and childbearing<sup>14</sup> (Crocket and Bingham, 2000) to the type and level of work women undertake, and to their family and career orientation, in girls' educational direction and levels of attainment (O'Brien et al 1999; Trusty, Robinson, Plata, & Ng, 2000) and has linked parental involvement with career choice behaviour (Eccles, 1994; Rocha,. 1996; Hoose & Varholt, 1997; Ferry, 1999). In particular, parental socio-economic status (SES) is known to have a profound effect on educational attainment and career destination, as well as on the life-course in general. Referring to research on poor American families, Levine and Nidiffer (1996) report that children from homes with low SES are more than three times as likely not to complete high school, twenty times as

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<sup>14</sup> The timing of these transitions is also associated with career orientation – the later the transition, the greater the likelihood of not following a traditional female career path.



likely not to graduate from college, four times as likely to be unemployed, and more than three times as likely to die before reaching adulthood than their peers from more affluent backgrounds. In addition, higher levels of parental education have been significantly associated with their daughters' later expected transitions concerning leaving school, entry into work, marriage and childbearing (Crocket and Bingham, 2000). The timing of these transitions is also associated with career orientation – the later the transition, the greater the likelihood of not following a traditional female career path.

Academic performance has also been found to be predicted by parental SES, with higher levels of SES correlating with higher levels of academic achievement (Inoue, 1997; O'Brien, Martinez-Pons, & Kopla, 1999). This would seem to operate in a variety of ways: For example, children from low-SES backgrounds tend to have poor reading and writing abilities compared to children from high-SES families (Peterson, 1997) primarily through the effect of poorer levels of parental literacy and basic skills (Bynner, 1998). Reduced access to educational resources in the home, such as books, writing equipment, and computers also contribute to this effect (Pisapia, 1994), as well as not having a dedicated place to work. Children from high-SES backgrounds may be advantaged not just in access to more and better resources but also by having parents who are more likely to have the skills to assist in their use and application: Such children are also more likely to be given parental encouragement to succeed (Sharf, 1992).

Teachers' behaviour towards their students has been found to differ according to the SES background of the children: Children from low-SES backgrounds are expected to behave and to do less well than those from higher, more middle-class backgrounds. Through the effect of 'self-fulfilling prophecy', children predicted not to perform well

often do under-perform, which can, in turn, lead to behaviour problems (Brown & Evany, 1998; Burns, 1982; Mazer, 1971). It has also been shown that teachers show 'cognitive dissonance' (Festinger, 1957) whereby when confronted with evidence that low-SES children have performed better than expected, or children from higher-SES backgrounds have performed less well than expected, the evidence is rejected. Better than expected performance by low-SES children may be explained as the child simply having been lucky, or by the assumption that another child had helped them. The contrary happens when high-SES children under-perform: This is excused as the child having had a bad day or the situation being confusing (Brown & Evany, 1998; Burns, 1982).

SES has also been found to contribute significantly and directly to career choice behaviour (Sewell & Hauser, 1975) in that adolescents from middle-high SES backgrounds are more likely to envisage a wider range of occupations and to have higher levels of self-esteem (McDonald & Jessell, 1992) whilst children from lower SES groups are more likely to look for work in gender-typical areas (Poole, 1990; Murrell, Frieze & Frost, 1991; Mau, Domnick & Ellsworth, 1995; McKenna & Ferrero, 1991). Parental SES and levels of education have also been found to covary with female interest in high-prestige, traditionally male-dominated, occupations (Hannah & Kahn, 1989) and with non-traditional gender-role attitudes. Alternatively, girls from lower SES backgrounds have been found to be less likely to opt for advanced maths, science and computer courses (Moses, 1997) which are important fields of study for many female atypical occupations.

Research findings also suggest that levels of parental investment in their children's schooling and upbringing, and the amount of time parents spend with their children in joint activities both within and outside of the home is significantly related to



a child's level of educational aspiration and academic achievement (Stecher, 1999; Hickman, 1995), higher levels of which predict a lesser likelihood of typical career choice (Ary, Duncan, Duncan & Hops, 1999; Flannery, Williams & Vazsonyi, 1999; Gustafson, et al, 1992; Smith-Maddox, 1999). The theoretical background is that joint parent/child participation in activities such as visiting museums, going to the theatre, and making music together, facilitate the transmission of cultural capital between parents and their children, and promote the accumulation of social capital of children and adolescents (Bourdieu, 1997). Côté (1996) also suggests that identity capital (which comprises both human and social capital) is heavily influenced by home background.

### **School**

One social context that has a unique impact on eventual career choice is that provided by schools. Within this environment children learn not just about the world in which they live but also about themselves. School is a world based on assessment, the results of which are openly measured against those of others. Progress – or lack of it – is charted, reported and documented, monitored and rewarded – or punished – as the case maybe. Probably at no other time does an individual come under such pressure to conform to so many varying groups and sets of values, as embodied in the expectations of teachers, parents, and peers.

In terms of gender differences, schools actually operate across the divide of internal and external influences in that they can have both a socialisation effect (impacting on self concept and self esteem via such things as covert gendered messages conveyed by teachers concerning differences in expectations) and a direct effect on career choice via curriculum access, teaching quality, school ethos, and provision of support services such as career counselling.

With reference to women's career choice, women's access to education has undoubtedly been crucial to normative change in gender role attitudes, and their participation at all levels of education has been important for a decrease in discrimination, at least with regard to level. However, schools and other institutions of education can serve to re-enforce gender stereotypes so that gender inequality is often less a matter of inequality in access and more a matter of gender differentiation in educational experiences and outcomes (Kessler, Ashenden, Connell, & Dowsett, 1987; Jacobs, 1996).

Course choice can be a useful predictor of career choice because the failure to study certain subjects, especially Maths and Science, can preclude entry into some higher level courses, and into particular careers, and it is here that one of the main gender differences in education lies (Eccles, 1994; Ziegler, Kuhn & Heller, 1998 – for Germany). Where pupils or students are able to choose, girls typically choose into the Arts and Humanities, with languages a strong favourite, and report less interest in Science and Maths, which are more typically the choice of boys (Dauber & Benbow, 1990). Whilst it is compulsory to follow courses in Maths and a science up to age 16 in the UK (and in Germany for the Abitur, although depth of study can be selected) girls are more likely to opt for general science courses, and less likely to be entered for higher levels in Maths where the syllabus is graduated (Arnot, Gray, James, Rudduck & Duveen, 1998). This differentiation is also related to age and level: The older the student and the higher the course level the greater the gender gap (Arnot et al, 1998). Thus, whilst girls slightly out-perform boys in maths at age 16 in the UK, in higher education courses involving maths and/or computing, males and females are in a ratio of 14% to 6% respectively: and within higher education courses involving engineering, technology or architecture, the ratio is 25% male to 2% female (Cheng, Payne &



Witherspoon, 1995). Whilst the gender gap does seem to be narrowing in some areas, such as in maths up to 'A' Level examinations at 18, in other male-typical areas, such as physics, technology and economics, the gap is increasing. Interestingly, the gender gap in female-typical subjects, such as English and Modern Foreign Languages, is decreasing (Arnot et al, 1998).

From a longitudinal study, Dunteman, Wisenbaker and Taylor (1978) attempted to see why differences in subject and course choice exist. From their work they identified two sets of values, or areas of interest, which predicted students future areas of study:

1. 'Thing-oriented', reflecting an interest in manipulating objects and understanding the physical world.
2. 'Person-oriented', reflecting an interest in understanding human social interaction and a concern with helping people.

Further, they found that people who were predisposed towards category 1 were more likely to go on to study maths or science, whereas those oriented towards category 2 were more likely to go on to study subjects other than maths or science. Overall, women were found more likely to be oriented towards category 2 and males towards category 1.

In a longitudinal study of maths course enrolment by American college students (Eccles, 1994) - which also showed a strong differentiation in course choice, whereby males typically enrolled for maths, science and sport, and females chose languages and humanities - the most frequently given reasons for girls not enrolling in maths were that they felt it to be less important, less useful or less enjoyable than was reported by the boys. This would seem not to result from a lack of ability on the part of the girls, for even where girls are particularly gifted at maths they considered higher studies in the subject, or working in related occupations, significantly less often than their male

counterparts (Benbow, 1988<sup>15</sup>; Hannover, Scholz, & Laabs, 1992). One reason suggested for this by Eccles (1994) is that girls' expectations for success within these subject areas are lower than they are for other subjects, such as languages. This is supported by Joffe and Foxman (1988) who found that girls underestimated their success in Maths - following a mathematical task, more boys in the sample said the task they had been set was easy than actually got it right, and more girls got it right than said it was easy!

In seeking solutions to the problem of girls' poor take-up of maths and science (beyond general science and biology) single-sex schools have been heralded as an answer. In an OFSTED review of recent research on gender and educational performance (Arnot et al, 1998) it is reported that girls in single sex schools are more likely to study maths and life sciences to 'A' Level than girls from mixed schools. However, research into this area is generally scarce and the effects reported tended to disappear once the initial performance of the girls on entering school was taken into consideration. The conclusion would seem to be that all-girls schools do make a slight difference in the take-up of maths and science at higher levels but the reason for the difference might lie beyond their being educated separately from boys.

Finally, with regard to girls and their relationship with maths - as was discussed in the first part of this chapter - gender differences have been related to bio-genetic factors, especially brain function, (Rowe, 1994). However, in a study by Taylor, Leder, Pollard, & Atkins (1996), which examined data for 500,000 entries to the Australian Mathematics Competition, covering the years 1983 to 1992, it was found that the number of females in post-compulsory education choosing to enter the competition were now close to those of males, and that performance differences were decreasing (except for algebraic questions, where trends were reversed). It would seem unlikely that so

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<sup>15</sup> In their study of gifted children (Benbow, 1988) only 20% of the girls compared to 40% of the boys,



marked a change over such a relatively short period of time could be due to biological or genetic changes, but is more likely to be due to changes in some factor or factors in the girls' micro or macro environment, possibly within schools and their approach to girls studying Maths, but also possibly within changes in social expectations and beliefs.

From the work of Eccles (1994) and her findings that girls have a different value system to boys concerning subject and course choice, it is known that choice is strongly determined by perceptions of a task related to the fulfilment of a person's self-image. Certainly, as was found by Bell (1989) in her study of gifted students, self image can be problematic for girls, especially in adolescence whereby they can be torn between stereotypical female images of beauty and home-maker, and career orientation. Despite their academic abilities, the girls in her study saw many barriers to success and felt caught between doing their best and, either appearing feminine or doing the 'caring thing'.

As was proposed by Charles Cooley's 'looking-glass self', self-image is affected by how we perceive ourselves through our interpretation of feed-back from others. Here, gender differences also occur: some studies have found that women react more strongly to the evaluations of others in their self-evaluations, and that they construe the evaluations of others as more informative about their actual abilities than do men (Roberts, 1991). Consequently, if the assessments and judgements of others favour stereotypical gender roles, attitudes and values, then girls may be more susceptible to the effects of stereotyping than boys. In schools, where pupils are constantly subjected to assessment, both academic and personal, by teachers and peers, the consequences for girls are easily estimated: If girls are not expected to perform well in maths and sciences and if this is relayed to them via less than positive or encouraging attitudes on the part of

parents, teachers and peers, then they will be less likely to assess themselves as competent in these areas despite good performance

As has been shown, students will usually opt for courses where they have greatest expectations of success, and where they place a high value. Nevertheless, it would seem that, even when they experience success, girls do not choose maths and science-based careers because they have less confidence in their abilities and place less value on these areas than boys<sup>16</sup>. This could indicate cognitive dissonance whereby even though girls experience success, due to socialising effect and direct feed-back from others, they do not expect to be (and are not expected to be) successful, and thus reject the evidence in favour of their expectations. In the same vein, individuals tend to make choices that support their self image and where experience matches expectations. Thus, if girls are socialised to expect themselves to be successful in person-oriented subjects, rather than thing-oriented subjects, then it is understandable that they are more likely to choose to follow courses in the former, and to opt for careers in areas where they can expect to maximise their perceived potential.

To the extent that women and men have different self-images, various activities will come to have different subjective value for women and men. And, to the extent that women and men place different subjective value on various educational and vocational characteristics, they should also differ in their educational and vocational choices.  
(Eccles, 1994, p597).

School is, of course, very much about level of educational attainment and a high level of educational attainment has been found to be a major contributory factor to the

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<sup>16</sup> However, the effect is mediated by other factors besides gender. For example, whereas white, middle-class, educated males are likely to predict more success (career-wise) than like females (Vollmer, 1984), black females are more likely to predict success than black males (Smith, 1982). In addition, low socio-economic status children's predictions of success have been shown to reveal no gender effect (Fulkerson, Furr & Brown, 1983). Context is also known to be important in self-estimation of ability: Among equally able children, those in academically high-flying schools had poorer academic self-esteem ratings than those in less achieving schools (Marsh, 1990). Likewise, black children in mainly white schools have shown less academic self-esteem than those in more racially balanced, or mainly black schools (Coleman, 1966).



typicality of career choice (Devine, 1993). This connection is logical when the atypical occupation in question is a high prestige, male-dominated, profession, yet many female-atypical careers fall outside the professional sphere but nevertheless demand a high level of education and training, such as electrician or heating engineer. It is also plausible that females who want to enter atypical careers require higher educational qualifications than their male counterparts to boost their chances of selection. Certainly, the converse is well understood: Adolescents with low levels of attainment in school have less choice when trying to find a training or work placement and find themselves steered towards typical occupations (Fobe, 1997; Heinz, 1996). Poorly qualified women in particular are more likely to be confined to poorly paid or routine jobs (Berger and Berger, 1983). Level of academic achievement is also a predictor of attitudes to work, the self, sex-role, and life-preferences (Fassinger, 1985) and can denote characteristics such as task engagement, determination and persistence; i.e. level of academic attainment can represent other qualities apart from sheer intellectual ability. There are also strong links between educational motivation and achievement and career trajectory – low levels have been found to have a high correlation with no advanced education and being a mother by age 26, whereas high levels correlate with advanced education and no children at age 26 (Gustafson et al, 1992). Likewise, Crocket and Bingham (2000) found the role of education highly influential in the girls' future plans: Educational aspirations predicted their expectations in transitions concerning school completion, job entry, marriage, and parenthood. Finally, the effect of educational level on access to occupations has increased greatly towards the end of the 20th century, in that young people looking for work in the 1980's needed to demonstrate much stronger evidence of identity capital (i.e. including educational level) than had their counterparts twelve years previously (Bynner, 1998).

Teacher/pupil interactions and teachers' predictions about pupil performance, are well known to be influenced by pupils' gender (Hill, Holmes-Smith, and Rowe, 1993; Delamont, 1983; Walker & Barton, 1989; Serbin and O'Leary 1975). In particular, the gendered expectations and values of teachers (including unconscious teacher bias) have been found to influence students' perceptions and reactions to school, especially in respect of choices related to the curriculum (Abrahams, 1995). Most noticeably they have been found to reinforce girls' negative or ambivalent attitudes concerning science and to contribute to their failure to excel in both science and maths (Jewett, 1996). Classroom interactions also differ by gender, resulting in boys developing more public- and to girls acquiring more private-learning strategies, so that the latter often prefer to approach teachers after class to ask questions (Arnot et al, 1998). The gendered way in which teachers deal with their students in class has also been reported, whereby boys often feel more harshly treated, particularly in terms of special allowances made for girls (for example to leave the classroom to visit the lavatory repeatedly) or where they are punished for behaviour that is tolerated in girls (Christmas, 1989; Cullingford, 1993). Certainly girls are expected to behave differently; school resistance is seen as unfeminine behaviour while being accepted as part of normal male behaviour (Kessler, Ashenden, Connell, & Dawsett, 1987). It has also been noted that some teachers seem to value female students "...more for their appearance and good behavior than for their competence and intellectual skill" (Lips, 1993, p287).

Beyond the differentiated treatment by teachers<sup>17</sup>, the assessment and judgement of peers is important in the reinforcement of gender role attitudes and particularly for conformity to gender stereotypes, especially concerning career choice (Jewett, 1996),

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<sup>17</sup> As this work will be set within the contexts of the two regions of Germany, it should be noted that differences in the value priorities of teachers in East and West Germany were found in a study by Boehnke, Dettenborn, Horstmann and Schwartz (1994) whereby teachers in the West valued self-direction



sex-appropriate behaviour and attitudes, and course choice (Fear-Fenn and Kapostasy, 1992). Indeed, peer networks provide a context where “much of the politics of gender is worked out” (Kessler et al, 1987, p232) and in adolescence<sup>18</sup>, peer pressure can exert a greater influence in terms of conformity than that of even close adults (Harris, 1999). As such, peer groups form a crucial socializing agent (Douvan and Adelson, 1966) and failure to conform can result in harsh treatment, such as name calling or other forms of bullying, including physical harassment or social ostracism (Hartup 1983). The effect, though, seems to be much greater for boys than for girls (Siegal, 1985) and to have a greater negative effect on their academic achievement. Not surprisingly, therefore, boys were found to rank academic achievement against popularity with their peers 'significantly lower' than did girls (Schneider & Coutts, 1985). While both sexes have been shown to prefer close friends of the same sex, girls are more supportive and enabling in their interactions, preferring smaller, more intimate friendship groups. Boys on the other hand are more competitive and assertive in their dealings with each other, and have been shown to prefer larger, less intimate groups (Lips, 1993).

The composition of the peer group is of particular significance with regard to the extent of the effect of peer pressure. A conventional peer group is considered to be, same age, same school, same sex, whilst unconventional is said to be mixing with younger or older peers, especially mixing with those who have already left school and are already in employment. Association with unconventional peer groups has been correlated with career versus home-making orientation for girls. In a longitudinal study of 450, 15 year-old females, Gustafson, et al (1992) found that mixing with younger

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more strongly than teachers in the East, whose values were more directed towards security. No gender differences are discussed but these findings may be pertinent for some of the findings later in this work.

<sup>18</sup> Although other research (Langlois & Downs, 1980) has also shown peer pressure to be considerable in very young children, particularly concerning adherence and conformity to gender stereotypes. This is supported by the work of Fagot (1985) where 2 year olds in play situations with a teacher present,

peers was significantly related to staying on at school, attaining higher academic qualifications, and not having a child by age 26. Alternatively, association with older or working peers, or with a steady boyfriend at age 15 was found to be related to having no advanced academic education and to having borne at least one child at age 26. In the same study, academic motivation at age 15 and actual attainment was found to be a strong predictor of career or homemaking orientation at age 26. In other words, among the females in this study, high educational motivation in adolescence was related to a young adult orientation towards a career, whereas low motivation was linked to a young adult orientation towards homemaking. On the basis of these results, nearly 70% of the adult sample could be categorised into those with no theoretical education<sup>19</sup> and having children, and those with a theoretical education and no children.

Other research has indicated a significant correlation for women between following a career and having children (Rand & Miller, 1972). Yuen et al (1995) have also shown strong links between non-marriage and career-oriented groups of women, and between marriage and non-career, 'homemaking'-oriented groups. Tinsley and Faunce (1980) have shown links between the number of children and female career commitment so that the notion that most women combine career<sup>20</sup> and family is not borne out. Data certainly seem to indicate that entry into female occupational areas is planned, even at university level (see Grimm, 1978) and that many women entering female-traditional work areas indicate their anticipation of interrupting their work to have children.

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controlled one another to conform with gender stereotypical behaviour. This was not teacher controlled and was seen to be significantly stronger in the behaviour of the boys.

<sup>19</sup> Theoretical education in this context means one other than a vocational or practical education but including technical studies, physical and social science etc. i.e. an academic gymnasium level course.

<sup>20</sup> It should be noted here that the use of the word career is the more restricted usage meaning entry into a professional class and not just entry into the labour market per se.



The general interests of students have also been found to be a significant predictor of course-taking in school and in further or higher education (Benbow & Minor, 1986) and to have a strong relationship to the types of occupational areas chosen. In their study of gifted children, Dauber and Benbow (1990) showed that girls rated stereotypical occupations, such as secretarial work, medical and social services, artistic and domestic work, more highly than did boys, whilst boys rated higher status, business-related, engineering, military and physical science occupations, more highly than stereotypical female occupational areas. This variance in the gender rating of occupations was also reflected in the students interests, whereby girls spent more time involved in reading, writing and arts or domestic related activities, and boys spent more time involved in sport, working with machines or tools, electronic equipment etc. (Benbow and Stanley, 1984). Schulenberg et al. (1991) also found that males score more highly on technical-related interests. Girls are less likely to be interested in or involved with technological things, such as computers, to perceive technology-related courses as more appropriate for boys (Farenga & Joyce, 1999) and are less likely to follow courses in information technology at higher levels (Hannover, 1992; Lips, 1993; Moses, 1997, Jones, 2000). However, girls also seem to spread their interests over a wider variety of areas than do boys and this has been found to translate into life goals (Sears, 1979; McGinn, 1976).

Leisure activities in adolescence have also been associated with career choice: In a longitudinal study with 18 years between two points of measurement, it was found that they predicted the career choice for one third of the sample (Hong, Milgram & Whiston, 1993). Further, the type of play and leisure pursuits engaged in during childhood and adolescence are known to predict the level of gender-typicality of occupational preferences (Fend, 1991; Schulenberg, Vondracek & Crouter, 1984; Eccles, 1994;

Hackett, 1995): Children who choose gender-atypical toys or games, or who follow gender-atypical leisure activities in adolescence, are more likely to choose gender-atypical careers, and vice versa.

With regard to the influence of school, while girls have the same access to education, and generally outperform boys at both 16 and post-16 examinations, they have a very different school experience to that of boys. Girls would seem to have a different set of values and expectations, especially concerning subjects such as Maths, Science, and Technology, resulting in persistent differences in the area of course selection, especially post-16. The interaction of girls with their teachers would seem to reinforce stereotypical behaviour that suggests girls in school should behave, learn and be successful in a different way to boys. On average girls do well in school - indeed better than boys in many examinations - but leave with academic achievements and attitudes that will have a strong determining effect on their life-choices, especially regarding family/career orientation and on the typicality of their career choice.

### **School-to-work transition**

School-to work-transition is important, not only because of its role in adult identity formation (Savickas, 1985; Blustein, 1997; Bynner, 1998) but because it constitutes a filter in terms of occupational direction and career orientation, where dreams and ambitions concerning future careers can start to become a reality or begin to falter. In Western economies, traditional patterns of school-to-work transition typically revolved around the notion that boys were preparing for a life-time of work as a 'breadwinner', whilst girls were preparing for their long-term primary role of 'house-maker'. In this way, training provision for young males took precedence over that for young women, especially in countries such as Britain that had taken a more flexible approach to vocational training (Wallace, 1991). However, even in countries with more



structured training provision, like Germany, marked gender segregation in post-compulsory educational provision was also evident, with boys enjoying a much wider training provision than girls (Shell, 1981).

More recently, investigations have shown that a greater variety of pathways have become available with which young people can navigate their transition from school to adult work role – some of which may be more likely to lead to success than others. In their comparative study of Germany and England, Evans and Heinz (1994) describe four types of transitional behaviour: strategic, step by step, wait and see, and chance taking. Likewise, Krahn (1991) in a study of Canadian youth, proposed a typology of four types of transition from school to work: T1 is described as the pathway of ‘traditional’ students i.e., entering into full time education and T4 as ‘transition complete’ i.e., entering full time work. T2 is the ‘residual’ group who engage in an ongoing mixture of work and education and T3 delay their transition by first going into full time work and then returning to full time education. The conclusions drawn from these findings are that young people cannot be considered a homogeneous groups during this stage in their development and that group T2, which was significantly the largest of the four groups, indicates that neither of the ‘direct to work’ or ‘work after study’ groups can be assumed to be the norm for most of today’s youth.

Whilst it is not clear from this work whether females are more likely to be found in one transition group more than any other (although, it is known that at least as many women enter university as males) vocational courses, training schemes, and what they study, are all markedly gendered (Krahn, 1991; Chen et al, 1995). For example, in the UK, Cockburn (1988) found that girls in training were concentrated into just 3 of the 11 training ‘families’ available – namely, caring, health, and social services – whilst boys dominated 7 – accounting for over 96% of trainees in installations, maintenance and

repair. A similar situation is seen in Germany, where the majority of female apprentices in 1995 were concentrated into courses for medical assistant; office work; retail sales; dental assistant; hairdresser; industrial clerk; and bank clerk, and the males into courses for car mechanic; electrical installations; bricklayer; carpenter; gas and water installation; painter; and wholesale and retail sales (Datenreport, 1997).

The school-to-work transition, however, is not made by the individual in isolation, rather it is mediated by 'gatekeepers', such as families, organisations, professionals and governments (Stone, 1991) and it is encounters with gatekeepers that can form the first major hurdle for young people in attaining their desired career. For most, above and beyond the influence of parents, the most immediate gatekeepers they will encounter are those associated with school and career advisory services. As described by Delamont (1983) schools tend to present a more conservative context for career planning than many home or work environments, and to be particularly unsupportive of students who express interest in following careers that do not lie within traditional gender bounds. In particular, careers advisors and employment officers can exert extreme pressure for young people to conform to gender stereotypes in their career choice. The case study of Michele (Wallace, 1991) is one such example: Her ambition, and aptitude, was to become a mechanic. However, although she had previous experience, her careers advisor recommended that she look for shop work. Whilst the advice was based on knowledge of the labour market at that time, the advice given was highly gendered and in strong contrast to the direction of her interests. As predicted, she had no success in finding a trainee placement as car mechanic - places were scarce and only boys were being recruited. She did find shop work, but disliked it intensely. She eventually found work, through word of mouth, sorting scrap metal, which suited her much better and paid well. The salient point is that, while the advice given may have



been correct in terms of availability of work, it was also highly gendered concerning the type and location of the work she was offered.

Finally, those who have had greater success at school and/or in higher education will have a greater chance of making a successful transition to work as they will have more to offer potential employers/trainers in terms of human capital. Those with higher reserves of social capital (social experience and skills) will further increase opportunities available to them. Côté (1996) however, proposes that it is 'identity capital'<sup>21</sup> that is functional for the successful negotiation of school-to-work transition. Nevertheless, for many reasons already discussed, and (as will be discussed later in this chapter) due to gendered assumptions about what constitutes suitable work for the two sexes, males and females with like amounts of human and cultural capital<sup>22</sup>, will have different experiences and outcomes from this transitional period.

## **Economic and Labour Market Organisation**

### Economic Systems

The level of economic development underpinning the context within which a career choice is made will affect outcomes for both males and females in that it determines, to a great extent, the type of work available. Using Fourastié's (1949) theory of economic sector development, in pre-modern societies the economy revolves around the primary sector (agriculture, mining etc), with work being centred largely on agriculture and home production. As societies develop and modernise, so the primary sector goes into decline and the secondary (production) sector increases, bringing with it changes both in

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<sup>21</sup> Côté (1996) defines identity capital as encompassing both human capital and social capital, and is said to be the reservoir on which the individual can draw to meet the demands of different life tasks (including career choice): Identity capital is therefore heavily influenced by home background.

<sup>22</sup> Referred to as 'cultural capital' Bourdieu and Passeron (1990) suggest that it is the influence of social contacts through middle class backgrounds that paves the way to many professional jobs. Collins, 1979, goes further suggesting that this is more important than particular skills or qualifications. Coleman, 1988, proposes the idea of social capital i.e. the role of information networks and shared norms in occupational achievement (Bynner, 1998).

the type and location of work, which moves from the home environment to centres of industry, and from a rural base to towns. Further social modernisation leads to a further decline in the primary sector and the start of a decline in the importance of the secondary sector, whilst the tertiary (service) sector increases.

Such economic developments lead to changes in the nature, type and location of work, and as such, have consequences for the genderfication of occupations. For example, where work is transformed from high status, skilled work to lower status, mechanised work through technological advances (as in the case of clerical work at the turn of the 19<sup>th</sup> century), it is likely to change from a male- to a female-dominated occupation (Reskin & Roos, 1990). It could also be expected that in economies where the service sector is developed, more women will be employed, given that women are traditionally found in service occupations, such as administration, sales, banking, hospitality, nursing, and education.

The type of economy can also impact on access to the work on offer. In centrally planned economies, such as those developed by the communist regimes of the Soviet Union and the GDR, the match between work and workers hangs strongly on the direction of the National Plan. Here the state determines not only the number of particular workers, such as engineers, doctors or teachers, that will be recruited and trained, but also, to a large extent, who will be selected for such work. That is not to say that a similar effect might not be realised by free market economies where other factors, such as market demand, the availability of work, or the level of an individual's human capital, may also act as barriers to a desired occupation. Rather, centrally planned economies focus on the needs of the collective not those of the individual and can constrain individual choice by directing them into occupations according to national need rather than their own preference.



## **Labour Market Organisation**

The organisation of the labour market and the structures within it form one of the most powerful external factors influencing career choice and destination. Many theories have been generated to explain the interaction between labour markets and the people who work within them, and in particular to explain the pandemic phenomenon of gender segregation (Anker, 1997). One of the most frequently referenced has been neo-classical economics theory, which is particularly concerned with human capital i.e., with the supply of and demand for labour. On the demand side, it is mooted that women's disadvantaged long-term position in the labour market is due to their having less human capital than men. This is based on the assumption that women's more intermittent labour market activity results in less experience, and that their areas of study and experience may be less relevant. The argument follows that, as women bring less into the labour market (usually referenced in terms of lower productivity) they are less likely to gain more senior positions, and therefore take less away with them in terms of financial rewards and benefits (Anker, 1997). On the supply side, it is suggested that because of the continuing practice of women bearing the brunt of child care responsibilities, they do not seek high demand jobs but rather seek part time work and/or work with less responsibility i.e. women value work second to other demands on their time (Hakim, 1991): Part time work and positions of little or no responsibility, it is argued, naturally attract less financial remuneration and benefits.

A second theory - 'dual labour market theory' – is that the labour market is segmented into two levels of operation or, according to Doeringer and Piore (1971), into primary and secondary sectors. (However, to avoid confusion with Fourastié's theory of economic sector development, which also utilises the terms primary and secondary sector, the term primary and secondary market will be used here). The primary market

comprises permanent jobs, secure contracts, career structures, good pay scales and added benefits etc, whilst the secondary market comprises less secure positions, part time work, temporary contracts, casual and seasonal work, poorer rates of pay and working conditions. Worker movement between the two markets, particularly from secondary to primary, is problematic. For the reasons given earlier, it is suggested that males are more likely to be found dominant in primary market jobs and women in secondary. This is, however, a classification of convenience in that it doesn't encompass all work situations, especially given the increased tendency towards fixed-term contracts for jobs that by all other criteria lie within the primary market. Nevertheless, apart from this caveat, the differentiation is useful.

Linked to both theories, Reskin and Roos (1990) have shown that work is labelled as male or female and that there is a 'pecking order' or 'labour queue' made up of potential employees, ranked according to employers preferences. Likewise, jobs are also 'queued' or ranked. In this way, those at the top of the labour queue get the pick of the best jobs from the job queue. Gender, race and class are all ranking factors, with white males ranking first in the labour markets of the USA and Europe. This works hand-in-hand with the 'genderfication' of jobs (Oppenheimer, 1970) so that workers are hired in accordance with the perceived 'gender' of the work. Changes in this perceived genderfication can be affected by various processes but research has shown that such changes are mainly due to employers moving to recruit from other sections of the labour queue rather than by prospective employees making individual inroads (Reskin and Roos, 1990). Changes in genderfication may occur through labour shortages caused by a reduction in the availability of the usual source of supply (e.g. men leave to go to war, or move into more prestigious work) or by the market sector expanding so that the usual labour source is insufficient to meet demand. The transformation of a particular job's



genderfication may be short or long term depending on the reasons for its initial reclassification. Where women were hired during both World Wars to do the work of the men called up to fight, they were replaced once men were again available. In other areas, such as in the example of clerical work used earlier, as the status of clerk was lowered with the introduction of the typewriter, men moved to other higher-status work, women were hired and the work became permanently re-classified as 'female'.

Recruitment practices, which can maintain gender segregation by recruiting only women or men into certain areas, are highly integrated into labour market structure and are a significant factor in career choice. For example, in their study to see if and to what extent recruitment practices encouraged, supported or reinforced the persistent gender segregation, Collinson, 1990, found that, despite the anti-sex discrimination legislation of the 1970's and 80's, and despite published declarations of equal opportunity policies, many firms maintain and support gender segregation through their recruitment practices. Informal processes employed during recruitment such as word of mouth, recruiting through the workforce, and utilising the 'old-boy network' were found to be the most influential. An example given was the recruitment of temporary packers (considered to be female domain by the employers and employees alike) in a wholesale warehouse in northern England. When on one occasion a man was hired by the staffing agency he was quickly moved by the company's personnel officer to a 'more suitable' position in the vehicle loading bays i.e., to a male environment. The explicit reason was that packing work was unsuitable because of its all-women environment. The move to the male environment was advantageous both in terms of skill ratings and wage differential.

### **Social Structure**

The functioning and development of the social system, of which the individual is a part, depend on the characteristic features of the society and culture (Magnusson & Stattin,

1998). One characteristic feature of a society is the way in which gender is constructed, and how it is related to the other parts of society. With regard to women's careers, the focus is the relationship between gender and those aspects of society that can influence career destinations through tradition, ideology, beliefs, and law – in other words, the relationship between gender and certain positions within a society. In particular, it is necessary to examine to what extent the hierarchy of functional differentiation within a society correlates with gender – e.g. how it translates into gender distribution of occupations vis-à-vis the structure of a society. One social/cultural construct that has been associated with gender role differentiation in western societies in general, and women's niche within labour markets in particular, is patriarchy. The term itself has been greatly debated, being used by some, such as the sociologist Max Weber, in the context of *patria potestas* i.e., societal organisation whereby all members of the family, clan or other self-contained social group, both male and female, come under the supreme authority of the senior male (Barrett, 1987). However, within the literature pertaining to women's work role, it is used more in the context of general social relations whereby males are dominant and females subordinate, and to describe men's control over women's labour both within and without the household (Hartmann, 1981; Cockburn, 1988; Walby, 1990 and 1997). In this vein Hartmann defines patriarchy as:

A set of social relations which has a material base and in which there are hierarchical relations between men and solidarity among them which enable them in turn to dominate women. The material base of patriarchal power is men's control over women's labor power.

(Hartmann, 1981: pp14,12)

However, even under this definition, patriarchy has no one single reference point. Formerly patriarchy was expressed mainly in private, i.e., women's social role was controlled through the ideology of the family and family-production relation - with the



increase of women in the labour market, patriarchy is now said to have moved to a more public form (Walby,1990):

In the domestic form the beneficiaries are primarily the individual husbands and fathers of the women in the house-hold, while in the public form there is a more collective appropriation. In the domestic form the principle patriarchal strategy is exclusionary, excluding women from the public arena; in the public it is segregationist and subordinating.  
(Walby 1997, p6)

Gender theory (Anker, 1998) is centred on the concept of patriarchy, whereby the inequality between males and females is considered to be based on the financial power men have gained through economic advantage, leading to power and prestige with which they control women's social and work role. It also sees, however, that gender inequality within the labour force is supported by the adherence in the labour market to negative female stereotypes linked to domestic production. Women are given the attributes of being caring, good at domestic related work, more dextrous, more honest, and physically attractive (seen as positive values), but are negatively labelled as having:

....disinclination to supervise others; lesser physical strength; lesser ability in science and mathematics; lesser willingness to travel; and lesser willingness to face physical danger and to use physical force.....greater willingness to take orders, greater docility and lesser inclination to complain about work or working conditions, lesser inclination to join trade unions, greater tolerance of monotonous/repetitive work; greater willingness to accept lower wages and less need for income; and greater interest in working at home.  
(Anker, 1997 p11)

These negative images, together with perceptions by employers of additional cost risks associated with hiring women workers (more frequent lateness to work and absenteeism, more likely to quit their job, special needs such as separate toilet facilities, paid maternity leave etc.<sup>23</sup>) affect the demand side of the labour market and assist the

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<sup>23</sup> There is little empirical evidence for many of these assumptions. Studies by Anker and Hein (1985;1986) showed that while individual women had higher rates of absenteeism, on average there was little difference between women and men. Likewise, there was little difference in the incidence of job turnover between males and females, but differences occurred in the reasons given: Women left for family reasons, men for other jobs (Anker, 1997).

genderfication of occupations (see Reskin and Roos, 1990, for a full description of the ranking of potential employees by employers).

Patriarchy and the capitalist system of production have been described as “mutually dependant” (Eisenstein, 1979) and Engels (1942[1884]) linked gender inequality to capitalism primarily via the existence of private property, noting that the ownership of property by men resulted in the subordination of women and that societies without it were egalitarian. Under Marxist theory, the disadvantaged social position of women was said to be integral with class struggle, - a struggle of all workers that was linked purely to capitalism. Therefore, whilst communism acknowledged the inequality of women, it was expected that this would be redressed with the building of a true socialist state (Nickel, 1997) and the abolition of class differences (Barrett, 1987). Logically, therefore, the abolition of private property and the removal of the class system, together with policies of equal work opportunities and pay provision for women, should mean that women in such societies were no longer subjected to the same patriarchal suppression as women in capitalist societies. For these reasons, writers dealing with issues concerning socialist/communist forms of production have tended to shy away from using the term patriarchy, often preferring to retain the theory of a legacy of class and capitalism to explain phenomena such as labour market gender segregation. If, however, as posited by Millett (1977), no significant class differences existed between women themselves because, in the main, women assumed the class of the male (husband, brother or father) upon whom they were financially dependant, then class alone could not be the problem. Rather it was the financial dependence of women on men that could be seen to support patriarchy and the subordination of women<sup>24</sup>.

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<sup>24</sup> This is the main point behind the essay by Virginia Wolf (1945) entitled ‘A Room of Ones Own’ whereby, in a lecture to the female undergraduates of Girton College, Cambridge she explains that it was the money left to her by an Aunt which enabled her to be independent, to have ‘a room of her own’ and thus to be able to write. She draws the conclusion that it is males’ control of property and finances



Although there seem to be good reasons for believing that the structure of the labour market and the organisations that constitute it, especially those of recruitment and training, do help to maintain the male dominated status quo, and thus also preserves males' economic advantage, more recently, some feminist writers have moved away from laying the blame and the solution to the subordinate social and economic position of women solely at the door of political and economic structures per se. In addition, while socialisation is acknowledged as playing a part, neither is it considered sufficient on its own to explain gender role differences and gender segregation in the labour market. Following this trend, some writers have reiterated and further highlighted the link between women's disadvantaged positions in the labour market and their domestic family role.

If we want to understand women's oppression we must therefore look, not at the supposed physiological or psychological characteristics of women and men (or rather, the supposed differences between men and women), but rather at who appropriates women's labour, and how.  
(Delphy & Leonard, 1992)

The work of Hanson and Pratt (1995) concerning the relationship between space (in the geographical sense) and gender supports this thinking. Their proposal is that because of women's domestic role and family attachments, women are restricted in their mobility, which results in their work also being geographically determined. This is often a two way process – for reasons mainly linked to family responsibilities, women will often take poorer jobs than justified by their qualifications and experiences in order to work in a particular location, and firms seeking to take advantage of women's reduced labour costs may relocate to areas where women are available, thus providing work opportunities. This underemployment can be viewed in the light of rational choice

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sustained by inheritance laws, that have prevented women from pursuing their own goals and denying them real power. See also King & Rabil, Jr. (1999) for a discussion of the historical background to women's legal position re property ownership and inheritance.

theory (Lindenberg, 1991) whereby women choose to work in stereotypical occupational areas based on rational choice, i.e. they are guided by what is possible and most convenient, rather than by what is necessarily desirable.

Another socio-cultural construct that impacts on women's career choice and labour market gender segregation is that of sex stereotypes, i.e., "socially shared beliefs that certain qualities can be assigned to individuals based on their membership in the female or male half of the human race" (Lips, 1993 p2). In this way, males and females, irrespective of their actual physical, mental and social qualities, are allocated certain attributes based purely on their sex - males are stereotyped as more naturally able at mathematics and things mechanical, while females are typed as being naturally good at languages and caring. As detailed by Anker (1998) however, female stereotyping can have negative connotations regarding women's aptitude for work in general, and for certain occupations in particular. Gender stereotyping of occupations also impinges on several other factors involved in career choice. It is known to have such a strong effect that it may cause foreclosure whereby "activities classified as part of the other gender's role are rejected, often non-consciously, without any serious evaluation or consideration" (Eccles 1994, p590). This can involve the rejection of whole occupational areas, as well as affecting girls' perception for success, expectations and value of the task. What is interesting, however, is that while boys negatively rate many female stereotypical occupational areas, girls view both male and female stereotypical occupational areas positively (McGinn, 1976; Sears, 1979). This would seem to indicate that girls do not necessarily opt for stereotypically female careers through lack of interest in occupations labelled as male but rather through their lack of expectation for success in these areas because they do not conform to their society's stereotype of what is suitable for women.



It is also known that gender stereotyping is in place at a very early age and that by the age of five children already have very clearly defined ideas of what constitutes appropriate gender-specific behaviour and attributes (Huston, 1983): That these stereotypes are reflected in what are considered as typical male and female occupations is also clear. Parents have been shown to demonstrate sex-stereotyped behaviour towards their children and for these attitudes to have an impact on the development of typical gender attributes. It is also known that such stereotyped attitudes (whether sexist or otherwise) are multiply mediated and contain a large non-conscious element. This can serve to make life easier in some situations by simplifying decisions and justifying personal conclusions and behaviour: Stereotypes, once established, are also known to be very difficult to change (Hilton & von Hippel, 1996).

### **Models of Women's Career Choice**

Before concluding this review of the literature mention should be made of studies that have already attempted to model combinations of specific personality traits and attributes (often taking a holistic approach and including external/contextual factors) in order to provide a more comprehensive and informative view of their functioning.

In 1983 Jacqueline Eccles and colleagues developed a comprehensive theoretical model based on work carried out in achievement, attribution and decision making theory research. The model centres on two main areas of personal decision-making influence – namely, the value attributed by individuals to the subject in question, and the individual's judgement of likely success. Further, the model relates these value judgements to the individual's personal contexts in terms of cultural environment, including role models, personal experiences, aptitudes and actual attainment. In a later refined model (Eccles, 1994) achievement-related decisions in the areas of education and career are linked to an individual's expectations for success and the value they

attach to the various options open (or perceived as open) to them. The outcomes are further related to the influence of parents and teachers, gender role beliefs, self perception, self concept, and task perception.

The model of factors involved in women's occupational choice by Astin (1984) focuses on four constructs: motivation, expectations, sex-role socialisation, and structure of opportunity, and hypothesises that the work expectations of men and women, and hence, their work outcomes in the form of career choice and occupational behaviour, differ because of different sex-role socialisation and structures of opportunity. A more comprehensive model is that of Betz and Fitzgerald (1987) which suggests that many of the characteristics positively associated with women's atypical career choice are those usually seen as denoting masculinity (such as, extroversion, ambition, self-confidence, being more technically-minded than person-centred). Of the various characteristics they include, self-concept, together with self-esteem, is said to play a defining role in women's atypical career choice. Overall, Betz and Fitzgerald suggest that high ability, androgynous upbringing and personality (i.e. a rejection of stereotypical gender-role attitudes, high levels of self esteem and self efficacy), higher levels of education, and a continued interest in mathematics are strong influences facilitating women's career development.

Similarly, in their model of the career choice and orientation of adolescent women, which is based on earlier models by Fassinger (1985, 1990), O'Brien and Fassinger (1993) suggest that high ability, agentic characteristics, non-stereotypical gender-role attitudes, mathematical success, an independent nature, and being somewhat detached from their mothers, all predict career orientation. Of these factors, they found high ability and strong agentic characteristics to be particularly associated with atypical career choice.



### **Summary: Factors Involved in Women's Career Choice**

This investigation into literature relevant to the question of why women work where they do has shown an almost overwhelming number of diverse factors to be involved, either directly or indirectly. Of the internal factors influencing self-concept (which is mooted as central to career choice) literature covering the nature-nurture debate suggests the presence of a bio-genetic effect on some personality and behavioural traits, but it is not conclusive that this alone can explain the persistence of either horizontal or vertical labour market gender segregation. Even claims that bio-genetic processes may be responsible for such things as girls' generally lower performance at higher levels of maths, and for boys being predisposed to rumbustious, aggressive play and to be more inquisitive, would seem to be countered by research implicating environmental factors related to sex-bias in social attitudes and gender differences in expectations of success. Changes over time in the genderfication of some occupational areas and in girls' increasing success in subjects such as maths, as well as national differences in what is deemed women's work, would also suggest a predominant influence of environmental rather than bio-genetic effect. Likewise, where a direct biological process is implicated, as in the case of early pubertal timing in girls, it is the reaction of others in society to the girl's precocious adult state that may impact on her career orientation and not the biological changes per se. In fact, the idea that personality traits and behaviour patterns are rigidly determined by a "genetic 'master tape' that is slavishly replayed" is not even accepted by all researches into genetics (Lerner, 1995) just as socialisation is rejected as being solely responsible for their development (Rowe, 1994). Indeed, Rowe himself seems to suggest that his claim for the role of heredity in behavioural development is largely in opposition to the claim, as was held by the communist regimes of the former GDR and Soviet Union, that behavioural development and attainment is wholly

environmentally determined, whereby individual differences, particularly in intellectual ability, are said to be the product of (class-based) social inequality and upbringing. In sum, whilst bio-genetic influences may be functional at the individual level, they cannot explain differences or change at the macro level. As Maccoby (2000) comments, the substantial changes in gender roles and the relationship between the sexes seen over the last hundred years have occurred much too rapidly to be explained in genetic terms.

From the nurture perspective, whilst the strength of socialisation effect on identity development, and as a means to explain the social and economic role of women, has been disputed by bio-geneticists and feminists respectively, the literature suggests that a vast array of factors deliver and reinforce society's view of what it means to be female or male. Children add to their sense of self by absorbing information from those closest to them and by imitating the behaviour of others so that parents and teachers act as gender role models: Parental expectations for behaviour, areas of accomplishment, level of success and the nature of their interactions with their children have been shown to be influenced by the sex of their offspring, and to be operative even before a child is born. Further, parents who do not consciously adhere to vigorous gender-typical behaviour at home, may nevertheless reinforce gender stereotypes through their everyday interaction with their children, as shown by gender differences in their attribution of personality traits to their newborn sons and daughters, in the types of toys they buy, in their verbal interactions, and in the area and degree of success they expect from their offspring in school.

The behaviour, expectations and predictions for academic success of teachers has also been shown to be subject to gender bias and in particular to reinforce girls' negative attitudes towards maths and science. Certainly, research pointing to socialisation effect reports gender differences in motivation for and actual academic



attainment, in assessment and task evaluation, in perception of ability and in reaction to achievement. In general it is suggested that women are socialised into a relationship/person-oriented value system that leads to different life-goals from men. These are translated into a specifically female attitude to careers and future roles, which ultimately steers career choice.

The contexts within which a woman makes her career choice have been shown to be multi-layered and to have a significant impact on the direction and fulfilment of career aspirations. First, factors relating to an individual's micro environment can influence internal factors, such as self-esteem and self-efficacy as well as having a more direct, concrete influence on career choice: Parental SES has been shown to influence not just availability of effective resources in the home but also teachers' perceptions of a child's ability and chances of academic success. Further, together with level of parental investment, parental SES helps determine a young person's social capital that, together with human capital, makes up an individual's identity capital with which they negotiate school-to-work transition and subsequent career paths. Schools themselves have been shown to have an impact on career choice in a wide variety of ways: Teachers play a role in supporting and transmitting gender stereotypes via conscious or unconscious gender bias and have a direct effect in terms of teaching quality and in their role in the overall ethos of a school. Single sex schools seem to provide a slightly more positive gender base for girls and a platform for their greater achievement in male-dominated subjects but the reasons are not clear and would not appear to be linked solely to educating girls separately from boys.

At the macro context level, an individual's career choice is influenced by the structure of the labour market, by its underpinning political ideology and by its level of development. These features will influence what work is available and to a large extent

control access to the different areas of work. Similarly, certain characteristics of a society, such as patriarchy and gender stereotyping, are implicated as having a determining effect on the nature and direction of women's labour and on the general acceptance of what work is deemed as 'suitable' for women. Stereotyping interacts with patriarchy in that it causes women to foreclose on a large number of occupations by classifying them as male and by establishing a barrier for women seeking entry to atypical occupations through pressure from individuals within a woman's micro and macro environments for her to conform. The domestic role of women is also seen as controlling the extent and location of women's participation in the labour market. Where women are subjected to the 'double burden' of domestic work and work outside of the home, the former will hinder the latter, especially concerning geographical mobility, and particularly where no external subsidised provision is made for childcare.

To what extent women actually *choose* to work where they do, or to what extent it is Hobson's Choice i.e. no real choice, is also raised by the literature. Proponents of Rational Choice Theory (Lindenberg, 1991) would support the notion that when women work in stereotypical occupations they do so because work in these areas presents them with the highest benefits at the lowest costs - high benefits in the way of social approval and the ability to fulfil the requirements of their multiple roles, such as the greater opportunity for part-time work due to the dearth of (affordable) childcare facilities - low costs by avoiding hostile, male-oriented environments and stress-avoidance by not going against the social norm. These costs and benefits, however, will be dependent on self-concept and long-term goals, and will both affect, and be affected by an individual's identity capital.

In sum, on the basis of research findings so far, no one factor can be singled out as being of primary effect concerning the typicality of a woman's career orientation and



destination. Rather, it is the product of a complex interaction between a vast array of factors arising from socialization experiences, biology (and heredity), dominant cultural norms, subcultural influences and unique circumstances (Harris,1995). This context-dependent, multi-layered interaction suggests that the relevance and importance of individual factors will vary from woman to woman and be dependant on the context within which the internal and external factors interact.

Finally, as has been seen, the research findings covered in this chapter primarily focus on individual factors or groups of factors that can be said to contribute to the complex issue of women's career choice. As such, none provide an explanation of why some women choose not to follow the traditional path into stereotypically female-occupations, and why the majority do – nor is the interaction between internal and external factors explored in relation to typicality of career choice. In response to this, as set out in the next chapter, this work will focus on the typicality of women's career choice from a broader, more holistic perspective, drawing on a variety of research methods and emphasising the interactive process between the individual and the context within which they operate.

## **Chapter 2: Research focus, research model, hypotheses and method**

The labour markets of Europe (and indeed the world) are gender segregated, and are so to the detriment of women. Typically, women's work pays less than men's work (Kaplan, 1992; Smith and Ward, 1984) is more likely to be low status and attract fewer benefits, such as paid leave or pension rights (Neft and Levine, 1997). Within the labour force, despite inroads into some traditionally male-dominated areas, women tend to be concentrated into a much smaller percentage of occupations (Reskin and Roos, 1990; Anker, 1998), to receive less training through work, and be less likely to reach the higher echelons of their occupation of choice than their male counterparts (Sharf, 1992;). Yet women are doing as well if not better than men in terms of school qualifications and are going into higher education in equal numbers (Arnot, Gray, James, Rudduck, & Duveen, 1999) so that observed differences between men and women in the labour markets of Europe cannot be explained by gender differences in educational level (Valian, 1998). This beggars the question, why then do most women seemingly choose to work in occupations that, at the very least, are less than favourable financially? As was shown in the literature review in Chapter 1, the factors that would seem to influence women's career choice, both directly and indirectly, are many and complex, and interact with one another on many levels. Consequently, any attempt to shed light on this question must address not only the individual factors but also the different levels at which they interact, and be sentient of the contexts within which they function. A research design is proposed, therefore, that sets out to explore the question of women's career choice typicality on three levels - national, cross-sectional and individual - in two different contexts and at two different points in time. The focus will be on determining which internal factors, if any, are more prevalent in women who break through the typicality barrier and enter atypical careers and on which external factors, i.e. contextual features, appear to best support women in this goal.



### **Rationale for the focus of study:**

Women's disadvantaged position in the labour markets of Europe gender segregation alone is sufficient reason for attempting to shed light on why women persist in entering occupations that do not reward their labour on a par with that of their fellow male citizens. However, the need to understand the mechanisms and processes underpinning women's career choice is heightened by the increasing number of households solely dependent on a woman's wage. While women have expressed pride and satisfaction at being the breadwinner for their families, and at being an active part of the labour force, on average women earn only about 76% of the average male wage, so that children of such families are disadvantaged compared to families where the breadwinner is male<sup>1</sup>. For example, in America in 1993, families where the sole earner was female had an average income of \$17,443, whilst those supported by a male had an average income of \$26,467 (Ohio University study, 1996). Other factors associated with lower paid work – lesser job security, pension rights, paid leave, conditions of work etc – also impinge on the quality of life for women and any that are dependent on her. The effect of gender differences in rewards for employment may also emerge in later life when pensions and other accumulated benefits are paid out: Women, if they live alone, are more vulnerable to poverty in old age than men – for example, in a report for the Canadian Department of National Health and Welfare (Regina University, 1992) it was shown that 61% of older women who were unattached to a male partner lived in poverty. Inequality in the work force was cited as one of the main reasons for their poor circumstances.

Although women have made inroads into many traditionally male-dominated occupations, it is generally acknowledged that recent increases in women's labour market participation have not been matched by an increase in parity between male and

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<sup>1</sup> In 1990, in the US, women at every educational level earned less than their male counterparts and, although the gender wage gap can be seen to be closing somewhat, it widens with age, and is also influenced by an average decrease in male's pay scales (Hanson and Pratt, 1995).

female workers, (either in the type of work they do, the hours that they work, or in the conditions attached to their employment) or by any significant reduction in labour market segregation (Reskin & Hartmann, 1986; Siltanen, 1990; Williams, 1993; Scott & Burchell, 1994). In fact it has been suggested that all labour markets are so stable in their segregation they should not be considered as homogenous entities but rather as two separate groups, one for men and one for women (Beckman, 1996). In addition, rather than promoting equality and reducing segregation, a substantial rise in the number of women in the labour market has been suggested as more likely to have the opposite effect, especially where the increased demand is due to structural changes in the labour market, such as the increase in the tertiary (service) sector and its association with typical female occupations (Jonung, 1996). Further, labour market segregation is predicted to continue well into this century (Beckman, 1996), despite the fact that some labour markets, such as the US, Britain and Germany<sup>2</sup>, have not only experienced an increase in the number of women active in the labour force but a decrease in the number of males: For example, in Germany, from 1991 to 1997 females increased their share of the labour market by 3%, whereas there was a decrease of .3% for males over the same period. Neither are these trends likely to improve the gender wage gap because of continued concentration of women into lower paid work and because many women enter as part-time workers – more so than men. Indeed, in order to attract women workers and to accommodate the seeming need for part-time work, employers are known to create part-time positions rather than offer equally plausible full-time work (Reskin and Roos, 1990).

In sum, despite increasing economic activity of women in the labour markets of Europe, and despite their progress in many traditional male-dominated occupations,

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<sup>2</sup> For the US: 'Gender and Employment. Current Statistics and Their Implications' from Ohio State Univ., Columbus, USA in Equity Issues. v3 n1 Fall 1996. For Britain: Labour Force Survey, Summer, 2001. For Germany: Mikrozensus data, 1997.



labour market gender segregation and the resulting imbalance in social power can be seen as a complex social problem that impinges on women's identity and quality of life throughout the life-span. However, although labour market gender segregation plays a significant role in perpetuating the gender wage gap (Sheridan, 1997; Low Pay Unit, 2002) the problem should not be seen as simply one of redressing the balance of pay between men and women's work. Gender segregation in the labour market is also about power and status, reflecting a view of women's work as less worthy than men's, and of women as less able to be effective in occupations deemed socially to be more important. The need then is also for more occupational areas to be available to and to be accessed by more women, and for women to gain positions of influence within them.

### **Location and Scope of the research**

In order to implement this research it is intended to compare the labour market distribution of women within the very different contexts (social, economic, and ideological) of the former German Democratic Republic (GDR – also referred to as East Germany) and the Federal Republic of Germany (FRG – also referred to as West Germany) and to compare etiological factors across and within groups (East-West) and across time (before and after German reunification). The aim is to see whether differences in labour market gender segregation (in terms of typicality of female career choice) are linked to contextual systemic differences, such as those related to making career decisions within a free-market, capitalist economy, or within a centrally planned socialist economy, or whether women in atypical careers are similar in terms of their biographies and personality factors, regardless of the context within which they work. These comparisons are thereby also expected to inform the debate on the interaction between the internal and external factors suggested by the literature as agentic in women's atypical career choice.

It is proposed to carry out this research within the context of the former East and West Germany because it has “ provided researchers with a previously un hoped for human social ‘experiment’. A people of the same history, culture, and language, were divided and then exposed to two very different political, economic and social systems” (Nolte, 1997). Their reunification in 1990 provided access to previously inaccessible data, and for data to be gathered from the two areas allowing a comparison of developments to be made across all spheres. However, of major importance for this study are the opposing attitudes and approaches taken by East and West Germany during their separation to the role of women in society, especially concerning their economic role.

### **Context 1: The Federal Republic of Germany**

After Germany’s division in 1945, the West maintained the traditional ideal of a Christian<sup>3</sup> family, with the father at work and the mother caring for the home and the children. Thus the role of woman, often summed up by the ‘3K’s’ – Kinder, Küche, Kirche (children, kitchen, church) was first and foremost that of housewife and mother, supported by a male ‘bread-winner’. This persisted throughout the 1950’s, and can be seen reflected in the images of women at this time, particularly in advertising where they were shown as preoccupied with fashion, household tasks and children. Later, through the ‘60s and ‘70s, as a result of a combination of the sexual revolution<sup>4</sup>, education reforms and increasing numbers of employed women, three separate models of the ‘ideal’ woman emerged in the West; “that of the industrious ‘good’ housewife,

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<sup>3</sup> An association between a county’s dominant religion and women’s social role has been noted. For example, Roman Catholicism has been linked to a lesser acceptance of women as political representatives (Rule, 2000). Further, increasing secularisation towards the end of 20<sup>th</sup> century may have loosened the hold of religion on women’s attitudes towards their social role (Inglehart & Norris, 2000).

<sup>4</sup> In June, 1961, the first oral contraceptive pill was launched in West Germany and, although its introduction was greeted by many as a moral danger and it was some time before it was officially available to all women, as elsewhere, it had a profound effect on women’s lives.



women with 'sex-appeal', and the self-confident, professional, working woman" (Schäfer, 1997).

This social value system was supported by law. For example, although in 1950, the constitution stated that 'men and women are equal', much remained on the statute book that actually contravened this. In particular, Article 3, Section 2 of the Constitution contained the sentence, 'The man is entitled to decide on all affairs common to married life'. The passing of equal rights laws in the late 1950's changed this legally but in reality, attitudes to women and work in the West, particularly to married women with children, changed little. For example, in 1959, Franz Josef Wuermeling, Minister of State for the Family, declared that, "The occupation of mother ... is the principle occupation and is more important than paid work." (Stirken 1997 p38). The dominance of the husband within marriage was also supported by law for long after many other countries had introduced the concept of joint responsibility: In 1968 it was still technically possible for evidence that a woman had failed to honour her pre-marriage promise to give up work after marriage, but that she had not done so, to be used as grounds for divorce (Helwig, 1997).

Thus, while the social code under which women in the West were socialised emphasised and placed great value on individual rights, and the political system supported 'liberty, democratic self-determination and personal responsibility' neither the social code nor the West's economic framework championed women's rights to full participation in the labour force, especially for women with children. In fact, German law has always maintained parents' supreme rights and responsibility for their children, even when at school<sup>5</sup>. More than this, however, the actual status of mother is singled out

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<sup>5</sup> In the German constitution, article 6:2, the care and upbringing of children is given as the natural right of the parents and as 'a duty incumbent upon them'. Teachers, therefore, are not 'in loco parentis', as in the UK, so that if a teacher absent, or where classes start later or finish earlier in the day, one parent (and traditionally this is the mother) is expected to be available or to make suitable arrangements for the supervision of their children.

for special attention by the German constitution which states that, “Every mother is entitled to the protection and care of the community” (Article 6:4, Deutsche Grundgesetz, 1990 – author’s emphasis).

In sum, in the West, childcare has been seen as the prime responsibility of the mother and the norm has been for women to care for their own children at home. Thus, unless they earned enough to pay for childcare, or had access to family members willing to help, entering full-time employment was made more difficult for women with children. This, combined with social attitudes about a woman’s responsibility for the children, meant that the majority of mothers with young children (86.3% in 1987) were not economically active (Bedau, Meyer & Schulze, 1990).

With regard to career choice, West Germany has followed a traditional path of information and discussion sessions coordinated between the career service (part of the Labour Office) and schools, supported by work experience programmes in senior school years. Theoretically few restrictions exist concerning women’s area of work so that adolescents could be said to have a free choice. However, entry into occupations in Germany is highly regulated and requires not only the appropriate school leaving certificate but also, in the case of occupations where initial access is through an apprenticeship, that a firm can be found willing to take on the young person as a trainee. This barrier is often highly gendered (see Chapter 1, school-to-work transition), and was even more so previously, particularly in the case of manual work where shift work was operating and where restrictions applied to women. This was said to protect the interests of women and, as had happened in Britain (Hakim, 1994) resulted from union/employer agreements concerning a ‘family wage’ that actually protected core male jobs and acted as an exclusionary mechanism for women. Access to higher education has always been via the Abitur and this gives anyone the right to go to university, although entry to some



faculties is restricted by *numerus clausus* (restricting the number of students by setting a minimum Abitur grade required for entry).

## **Context 2: The German Democratic Republic**

In the East, a very different and more overt ideological stance was taken to the role of women in society. Here, not only was the inclusion of women in the workforce grounded in political ideology, it also served to anchor trained work as the centre point of their socialist way of life (Nickel, 1997). The ideal was that of equal citizenship, of 'Heroines of work' working alongside their male comrades to build a new socialist state, while still retaining their mother role, and being politically active. In the East, even art –as Socialist Realism- reflected a different concept of the ideal woman. For example, the bronze by Walter Arnold (1952) entitled 'die Traktoristin' (female tractor driver) shows a happy young woman dressed in overalls whose identity was first and foremost that of worker.

Communist ideology claimed that women's oppression had been caused by a combination of patriarchy, capitalism and class, with patriarchy being inextricably linked to the other two. Thus it was said that by eliminating capitalism and class, patriarchy too would be removed, and that women, through their full time participation in the labour force, would finally be 'set free'. In February 1949, Walter Ulbricht, Deputy of the SED said, "The real equality of women [in the GDR] will exist when she has learned a profession and is capable of doing work which is really useful for society". This was affirmed in 1950 by Otto Grotewohl, the first Prime Minister of the GDR.

"The realisation of equality for women is dependent upon their participation in productive work...The fulfilment and extension of the Economic Plan requires a continuous and growing readiness on the part of all women to be incorporated into the production process."  
(Schäfer, 1997)

In contrast to the West, the constitution of the GDR not only made provision for women's right to work but also made it an obligation (Quack & Maier, 1994). Special laws were introduced to support married women and women with children in their working role<sup>6</sup>. The Family Law of 1965 declared that all affairs linked to raising children, feeding the family and other material provisions were the joint right and responsibility of both married partners, and it was formally stated that they should arrange their lives so that both could equally develop their occupation 'to the full benefit of themselves and society'. Equal pay for equal work had already been introduced in 1946, and by 1949 the constitution of the GDR, Article 7, stated that in law men and women had equal rights and equal worth, and that all previous laws and regulations that went against the equal rights of women were immediately invalidated.

Thus women in East Germany lived under a very different social code to their 'sisters' in the West, and were socialised in a society that expected women to play a full part in economic production and to take their place alongside men in working full time. But this participation was not to be at the cost of childbearing<sup>7</sup>. In support of their working role (but also from the ideological principle that downplayed the role of the family and didn't leave the education and socialisation of its citizens to the vagaries of parental upbringing) virtually cost-free child-care was provided that extended from new-born babies to young adolescents. To encourage women to have children, many social benefits<sup>8</sup> were attached to motherhood, such as the right to a flat of one's own (otherwise impossible), monthly day-leave to care for the home, the right to be away

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<sup>6</sup> In 1950 the 'Gesetz über Mutter- und Kinderschutz und die Rechte der Frau' (Law for the protection of mother and child, and women's rights) was introduced. This included material and social help for employed women and mothers, for example, the introduction of child benefit and support for those providing care. The 'Gesetzbuch der Arbeit' (Labour Laws) of 1961 prescribed measures to reduce the burden of women's multiple responsibilities, and included a development plan for the professional qualification of women. See Gerhard, 1994, for an overview of official policy re women in the GDR.

<sup>7</sup> Although, in the East, contrary to official reaction in the West, the contraceptive pill (hailed as the 'Wunschkindpille' i.e. the wanted child pill) was readily available on prescription and almost without charge.

<sup>8</sup> Social benefits attached to motherhood were introduced at various times during the time of the GDR.



from work on full pay if a child was sick, a years paid maternity leave, and other financial benefits. In the workplace, women were the object of a special development plan (Förderung der Frau, 1973) under which they were trained and became the most qualified in Europe (Quack & Maier, 1994; Nickel, 1992). Education was via a highly controlled comprehensive school system with, ostensibly<sup>9</sup>, no curriculum variation by gender.

However, (despite legislation to the contrary) women retained the bulk of domestic responsibilities (Helwig, 1997) which was made even more demanding by the frequent need to queue for food, and by the comparative scarcity of domestic labour saving devices.<sup>10</sup> In addition, the social laws, seemingly so beneficial to women, actually reinforced that theirs was the responsibility for the home and family. In terms of equal citizenship, whilst women were well represented at lower and middle levels of administration and government, the committees and offices that mattered in terms of real power and decision making, held few, if any, women (Best & Hornbostel, 1998). So much so, in fact, that throughout the existence of the GDR no woman ever held full membership of the Politburo, the ultimate sphere of power (Schneider, 1994). For this reason, social scientists in the West have used a rather crude and somewhat cynical ‘rule of thumb’ (following Putnam’s ‘Law of Growing Disproportion’) to establish the importance of a committee in the GDR – the more women or minorities were members - the less important the committee.

In addition, people in the GDR lived under a regime governed by the ideology of the collective good and the suppression of individual expression. The centrally planned economy resulted in a centrally controlled workforce and the ‘Economic Plan’ decided how many workers were needed, the number and location of training places, and the

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<sup>9</sup> ‘Ostensibly’ because anecdotal evidence from women in Thüringen, East Germany indicates that although the formal curriculum itself was not gendered, many free activities were, with girls doing sewing and boys doing crafts.

number of places in each university faculty. Consequently, although changing occupation once trained was not impossible, it was discouraged.<sup>11</sup> For these reasons, the word 'choice' in relation to careers, as far as it implies a general absence of restrictions, may be problematic terminology with regard to the East. The concept of choice had a special meaning in a social system based on collective ideology. Individualism was not encouraged and choice, therefore, whilst it could be based on individual attributes such as particular skills or preferences, was driven and limited by the wider needs of society and the state.

Nevertheless, within the limits of availability determined by the Economic Plan, there were almost no official bars to females' participation in any occupation<sup>12</sup>, nor was there a pervading social stereotype of weak femininity, or ideologies about a woman's place being in the home. More importantly, perhaps, there was no notion of a woman being a bad mother if she worked full-time. Thus, in terms of state ideology and support, the context in which women in the GDR were choosing their future occupations was supportive of women's economic role, suggesting that an egalitarian workforce with low levels of gender segregation and women well represented at higher levels of management, if not of government, could be expected.

### **Post-reunification**

On October 3, 1990, the German Democratic Republic was formally merged with the Federal Republic of Germany to form a federation of 16 states, including the city state of Berlin. Reunification meant a move from the East's centrally planned economy to the market-lead economy of the West and resulted in a major privatisation of east German firms with the Treuhandanstalt (State Trusteeship) undertaking the disposal of nearly

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<sup>10</sup> For example, in 1970, only 54% of households owned a washing machine. (GDR Today, 1981).

<sup>11</sup> In the 1965 Education Act of the GDR, legal provision was made for movement of apprentices after training between one enterprise and another. In reality, however, the movement of workers was discouraged, unless it could conform to the National Plan (Grootings, 1993).



8,000 formerly state-owned enterprises. Along with privatisation, East German enterprises had to shed large numbers of workers in order to become competitive. Workers were not only laid-off but many were given "short-time" (Kurzarbeit) work status whereby workers continued to receive full salary although only working part time, or sometimes not at all.<sup>13</sup>

With very few exceptions the systems of the West replaced those of the East. In particular, the centrally planned economy of the East (together with the concept of full employment and the system of virtually free, full-time child care) was replaced with the market-lead economy of the West and a subsequent reduction in state support for working mothers. (For a full description of these changes see Rosenberg, 1991; Goldberg, 1991; Eberstadt, 1994; Youniss, 1995; Adler, 1997). A disproportionately high percentage of women were made redundant<sup>14</sup> as the overstuffed, outdated industries and their social support institutions (which had been largely staffed by women) were trimmed or closed down to suit a market economy. Retraining programmes were set up and supervised by the Labour Office but nevertheless the women of East Germany found themselves in an economic and social climate for which they were little prepared, and where all those who could work found themselves in conditions of new employment.

Whilst the West was structurally unaffected by reunification, it did experience an influx of workers from the East,<sup>15</sup> and did suffer from the economic costs involved in rebuilding the East. Employers, who had experienced an economic downturn and

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<sup>12</sup> As in the West, shift work was restricted for women, but primarily for women with children, and mainly in heavy industries.

<sup>13</sup> By August 1990, besides those made redundant, 15% of the work force had been given Kurzarbeit status (University of Missouri-Saint Louis, 1993).

<sup>14</sup> Between 1989 and 1997 the percentage reduction in the female share of the labour market was almost twice that of males. Worst affected were single mothers, women with college degrees, and women over fifty (Rosenberg, 1991).

<sup>15</sup> In 1991, approximately 250,000 people moved from the East to the West, and 80,000 from West to East (Zahlen zur wirtschaftlichen Entwicklung der Bundesrepublik Deutschland: 1997, Institut der

structural problems in the 1980s, and who had begun to develop strategies to increase worker flexibility (Hakim, 1989) therefore continued this trend. Certainly, a rise in the number of part-time workers (one element of flexible working) is evident in the post-reunification period in the West. Pressure on companies to be competitive was also being exerted by globalisation which added impetus to the introduction of 'lean, mean' company structures and policies aimed at reducing labour costs (Glouchevitch, 1992). This, together with a high rise in the percentage of the workforce absorbed by the service sector<sup>16</sup>, will have had an impact on the structure of opportunity for the typicality of women's career choices at this time.

### **Research Focus Summary**

By comparing women in atypical careers in the former East and West Germany it is intended to reveal the effects of two very different economic and social systems, and their subsequent different structures of opportunity, on women's career destinations. The aim, therefore, is to see whether differences in terms of typical/atypical career destinations for women are linked to making career decisions within a market-lead, capitalist economy, following socialisation under an ideology of individual rights, self-expression and individual responsibility, with an emphasis on the traditional female social role, or within a collectivist, centrally planned socialist economy, following socialisation under an ideology of collective responsibility and decision making, with a non-traditional approach to women's social role. Also, it is hoped to illuminate the extent to which women in atypical careers may be biographically similar, regardless of social and economic systems, and whether within-group differences are greater overall than differences between East and West German women per se. Further, it is hoped to ascertain to what degree the social provisions for women in the East, such as state

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Deutschen Wirtschaft, Köln) but later, it was estimated that almost 1 million people left the East and settled in the West (Eberstadt, 1994).

<sup>16</sup> Between 1980 and 1996 the service sector expanded its share of the labour force from 15% to 23%.



provision of childcare, generous maternity provision in terms of job security and maternity leave etc, the lack of which has been cited as hindering women's efforts towards equality in countries such as Britain, actually lead to women in the East establishing themselves as true equals. In addition, it is hoped to support the findings by examining the effect on the career destinations and development of women who were socialised under one system (that of the GDR) and then made career choices and worked under another (that of the FRG).

### **Theoretical overview**

As discussed in Chapter 1, the literature offers several theoretical standpoints that attempt to explain why women work where they do. First, it may be a result of nature, of biological processes and coding which equip women with a particular disposition and specific attributes that suits them for specialised areas of work, particularly those associated with the fields of nurturing and caring. Further, it results in women's stronger orientation to family formation with the possible consequence that extra-mural employment is secondary in her value system. Second, it may be due to nurture, or socialisation, whereby society's gender role stereotypes are so pervasively transmitted that traditional gender roles are internalised and accepted as 'natural'. This inculcates traditional gender attitudes and values that lead women to seek work where they expect success, that conforms to their self concept and which matches their image of what is acceptable work for women. Third, it is suggested that external influences, i.e., contexts, such as schools and other related social systems reinforce gender stereotypical beliefs that influence and direct the choices and decisions of young people concerning their future, especially their school-to-work transition. Fourth, the organisation and structure of the labour market and its support systems (e.g. recruitment practices, training programmes) are seen to be subject not only to the economic systems within which they exist, but also to socio-cultural constructs, such as patriarchy and stereotyping, which

effectively control women's work, handicapping wishes women may have to work elsewhere. Anker's (1998) gender theory extends this and proposes that, while the structure and organisation of labour markets are the main influence on women's segregation in the labour force, it is compounded by the social reproduction of negative female stereotypes and the influence of patriarchy. Finally, dynamic systems theory (Lerner, 1978; Bronfenbrenner, 1979; Vondracek et al, 1986) suggests that none of these factors or theoretical concepts alone could explain women's career choice, their concentration into typical occupations, or labour market segregation; rather they suggest it is a dynamic interaction between the multi-layers of internal factors and the composite layers of external factors that make up an individual's structure of opportunity. All aspects of the system interact, with varying degrees of plasticity, and with varying degrees of effect.

Examining each in turn for their suitability as a research paradigm: It would seem unlikely that nature theory alone can explain labour segregation in modern labour markets i.e., that women's career choices are biologically determined. If women were biologically coded only to work in specific occupations, such as nursing, then one would have to assume that women who do not follow the traditional pattern are less female than those who do: There is no evidence to suggest that this is the case. In addition, as the work of Reskin and Roos (1990) shows, the genderfication of occupations changes. These changes are in response to social, demographic, labour market, and economic changes and not to biological shifts in the population. Further, what is considered as typical women's work in one country does not necessarily hold for another, indicating that the labelling of an occupation as either 'male' or 'female' is more a cultural construct than the result of programming by nature.



This argument is also supported by the existence of societies that do not adhere to a patriarchal structure: Whilst the subject of matriarchal<sup>17</sup> societies, and the debate concerning the veracity of this title (as opposed to matrilineal<sup>18</sup>, or matrifocal<sup>19</sup>) cannot be fully discussed here, it can be said that societies do exist where women are the controlling sex. One of the best documented is that of the Mosuo people who live in Yunnan Province of China. A non-Chinese ethnic minority, they have no word for father, and men and women do not form family bonds. The society is ordered around clan mothers, or matriarchs (ama). The men are primarily fishers, and the women's tasks are allocated by age. When women are between 40 and 60 years of age they are eligible for election to clan mother, and when not elected, assist the clan mother in administration of the social and economic affairs of the clan. Children take the name of the clan mother and inheritance is through the female line (Abendroth, 1998). Such female-centred systems of social organisation (which is not unique to the Mosuo) supports the theory that much of the social role attributed to women in Western societies, particularly concerning the status attached to various types of work, is culturally and not biologically constructed.

There is compelling evidence that socialisation by parents, peers, and the broader community (one could also add media to the list) is effective in transmitting cultural attitudes concerning social norms with regard to male/female behaviour – and hence, career choice. The unconscious and conscious transmission of gendered expectations concerning behaviour, attitudes and beliefs that are known to affect self concept, also impact on girls' ideas about their future role, especially concerning their orientation to family and/or career. Certainly, it would seem that stereotypical, doubting

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<sup>17</sup> The existence of matriarchal societies is disputed (see Taylor, 2002) and claims for their existence are often rejected because examples refer to more primitive societies. Critics suggest that a true matriarchal society would have to equate to modern social structures but where women were dominant.

<sup>18</sup> Female status is high due to economic power through inheritance passing through the female line.

<sup>19</sup> Mother-centred, usually with no resident husband or father.

attitudes towards girls abilities in areas such as maths and physics result in girls underestimating their abilities, even when their experiences are to the contrary, and consequently result in these subjects being placed lower in female's value systems. However, neither can the cause of labour market segregation be laid wholly at the door of socialisation - as suggested by communist dogma that held development and achievement to be purely the result of an individual's environment: Research has shown biological and genetic processes to be influential in developmental outcomes, and personality traits are, of course, involved in career aspirations, if not always in actual career destinations.

The evidence that external factors, or contexts, play a leading role in where women work seems equally compelling. Theories concerning gender differences in human capital, labour supply and demand, and the existence of two-tier labour markets, point to differences in how men and women experience work, and to how they are valued and perceived as workers. In market economies, employers, who are predominantly male, hold negative expectations of the needs and capabilities of women (Anker, 1998), as amply demonstrated by the exceptional increase in the hiring of women musicians in the US following the introduction of blind auditioning<sup>20</sup>.

Through labour market requirements, the dual role of women with families seems particularly to have been exploited as a source of cheap, part-time labour, at least cheaper than a full-time white male worker (Reskin and Roos, 1990). In these ways women are included or excluded from areas of the labour market not by their own whim but by the manipulation of employers and the search for profit. However, to believe that labour market organisation and strategies are completely responsible for the concentration of women into a minority of typical occupations would mean accepting

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<sup>20</sup> This lead to the likelihood of a female musician advancing from preliminary auditions to the next round increasing by 50% and was calculated to have accounted for a rise in the percentage of women in the top five orchestras in the US by between 25% and 40% since 1970 (Goldin and Rouse, 1997).



that the majority of women are completely manipulated by external systems and that they are simply 'unwilling victims'. This is as untenable as to believe in the singular influence of either nature or nurture.

However, the theory that women's work destinations are controlled by labour market organisation and structures, including hiring and firing mechanisms, is posited as simply one manifestation of patriarchy. This is said to control women in all spheres of society by the assumption of male superiority. The hypothesis is that patriarchy arose through men's control of women's production within the home environment and has moved into the public domain with women's entry into the labour market (Walby, 1997). This is given as one reason for the concentration of women into lower status, lower paid work: Much of the work women do for pay mirrors the tasks they have performed at home for free— food preparation, cooking, cleaning, rearing the young, caring for the old and sick, textile work, organisation of people and general tasks, etc. (Hakim, 1978) - and as such attracts little social worth in terms of financial reward or status. For the same reason, women's work is often not classed as skilled (also part of the reasoning behind lower pay rates), but rather as natural talent, despite the fact that it is often highly skilled (Jenson, 1989). Again, however, to assume that this alone could account for women's labour market segregation would mean assuming that women were simply victims, fully aware of the situation but somehow unable to do anything to transform the situation.

Finally, dynamic systems theory conjectures that human development is the result of a dynamic interaction between the individual and the different layers of contexts that comprise the environment within which the individual functions. As career choice is one of an individual's defining developmental tasks, and as this work seeks to explore the interaction between internal factors of the individual and the external factors, or contexts, within which career choice is made, it is plausible that this concept

should form the theoretical basis for this work. Thus, this research into factors involved in women's atypical career choice can be said to be located within the hypothetical perspective of dynamic interactionism.

### **Why atypicality?**

In order to ascertain the effects of the two different structures of opportunity for women provided by the opposing ideologies of the former East and West Germany, it is intended to compare women who have not chosen typical female or gender neutral occupations. The study of those not fitting into the norm rather than 'the rule' has been recommended where it is hoped to shed light on processes of selective behaviour, and where it is hoped to gain understanding of what rules and mechanisms are involved in the process of selection. Thus, studying those who demonstrate exceptional patterns of behaviour can reveal information concerning specific features and traits that may be necessary in order to overcome the obstacles possibly preventing others from behaving in a similar manner. In addition, as this study focuses on the characteristics of women, rather than on the characteristics of the work, it is useful to study those women who exhibit the characteristics required to bridge the gap and work outside typical female occupational areas – in other words, to study those who have the metaphorical key to the lock. Indeed, atypicality can be conceptualised as a passage through a sequence of filters, whereby those who enter atypical careers have passed through barriers others have not.

In terms of determining a measure for atypicality, there have been various measures used for determining integrated and segregated occupations (Reskin and Roos, 1990; Hakim, 1992, 1993, 1996; Anker, 1998). In the Social Change and Economic Life Initiative (SCELI) project, which studied six labour markets in the United Kingdom from 1985 to 1988, the measure of actual work place segregation comprised four categorisations: working mainly with men; working in occupations with approximately



equal mixture of men and women; working mainly with women; and working alone (Scott, 1994 p6). However, Scott and Burchell in their study linked to the SCEDI project, constructed measures of labour market gender segregation based on occupational group units from the Office of Population Censuses and Surveys (OPCS) from 1980. The classifications used were, *exclusively men* (90% - 100% men), *mainly men* (70% - 89% men), *mixed* (31% - 69% men), *mainly women* (11% - 30% men) and *almost exclusively women* (0% - 10% men) (MacEwen, Scott & Burchell, 1994 p121ff). Mirroring this, and following the recommendation of Hakim (1993b) that measures which allow for gender-integrated occupations, as well as male- and female-dominated occupations, offer a better basis for assessing and tracking labour market gender segregation, a measure of typicality was selected that comprised three categories, namely: female *atypical* i.e. male dominated ( $\leq 30\%$  women), *gender neutral* i.e., mixed (31% - 69% women) and female *typical* i.e., female dominated ( $\geq 70\%$  women). This is also in line with the percentages used by Betz and Hackett (1981), and the subsequent work by Kelly (1993), to define traditionally female and traditionally male occupations in their studies of male/female self efficacy beliefs linked to typical/atypical career choice.

The notion of 'typicality' and 'atypicality', when referring to a specific measure of the concentration of women in male-dominated occupations with which to compare labour markets, can presents some conceptual problems. From a statistical standpoint 'atypical' here refers to work within an occupation that at a given time, and in a given context, contains 30% or less males or females. However, the word 'atypical' is also used descriptively to refer to careers that are traditionally seen as male-dominated – for example mining and engineering. Therefore, when comparing different labour markets for equality of gender distribution, care has to be taken to differentiate between the statistical use of the term atypical and its descriptive use. It should be particularly borne

in mind that a labour market where men and women are equally distributed would be one where no occupational areas are statistically gender-typical or atypical and where all occupations are gender neutral.

Atypicality is also a term sometimes used in the literature in conjunction with the characteristics of the job, for example, when referring to the scheduling of work (temporary contracts, part-time work – as opposed to the ‘normal’ schedule of full-time work) and differences in wage rates, work conditions, career structure and training opportunities, etc., as well as referring to the characteristics of the person (e.g. education, work experience, aspirations, marital status, age, and number of children). Thus, with reference to the latter, within-group characteristics could also be considered as typical or atypical, so that where an occupation is seen to be typical for, say, women with no children, it may be atypical for women with children. To reiterate, however, atypicality in this work is primarily used to identify occupations in a given labour market, at any given time, in which there is a concentration of 30% or less women.

## **Hypotheses**

### **Hypothesis 1**

It is expected that the context in which a woman makes her career choice will be instrumental in whether that choice is for a female-typical or atypical career. Where the macro-environment does not emphasise the traditional female role in society, especially concerning the woman as prime child-carer, and where it actively supports an egalitarian economic role for women, women will be more likely to enter traditionally female atypical careers resulting in a more even distribution of women across occupations i.e. leading to lower levels of gender segregation in the labour force. By this definition, it can be expected that East Germany prior to reunification will have been a more supportive context for women to enter traditional atypical careers than the



context of West Germany, and that following reunification it will become less supportive as it follows the West into a market-lead economy.

### Hypothesis 2

It is expected that the extent to which the factors suggested by the literature as influential in the atypical career choice of women are functional will be dependent on context. In a supportive context, such as East Germany, women in atypical careers will exhibit fewer of these factors as fewer barriers to traditional atypical occupational areas will exist, so that entry into atypical careers will make fewer demands on personal resources, such as ambition or an aptitude for maths or physics. The converse will hold for women in atypical careers in non-supportive contexts, such as West Germany. Following reunification, as more barriers to entry into atypical occupations are expected to exist in the East, the strength and number of factors displayed by women in atypical careers in that region will resemble more the pattern found in the West.

With regard to the micro-environment, as the family remained the main social unit in both regions, it is expected that factors relating to parents and family background will be particularly influential in the typicality of women's career choice in both regions. However, it is expected that the correlation will be stronger in the West prior to reunification due to greater possibility for the effect of social and cultural capital to be utilised and because of the higher level of individual freedom in that region. Following reunification, it is expected that parents and family background will be more significant in the typicality of career choice in the East.

### Factors proposed as operative in women's atypical career choice.

#### *Home background*

- higher levels of parental SES and parental investment in the social capital of their offspring will correspond to higher levels of education and a greater chance of atypical career choice (Sharf, 1992; Gottfried, Gottfried, Bathurst, & Guerin, 1994).

*Level of academic motivation and attainment*

- higher level of attainment and motivation, (the lower, the greater the likelihood of early child-rearing and following a stereotypical career - Fassinger, 1985; Gustafson et al., 1992; Kelly 1993).

*Area of subject/course choice*

- a preferences for maths and/or physics, especially at a higher level (Benbow, 1988; Hannover, et al., 1992; Eccles, 1994).

*Area of leisure interests*

- an interest in technology or other 'thing'-oriented activities (Sears, 1979; Duntzman et al, 1978; Benbow & Minor, 1986; Hackett, 1995).

*Childhood play experiences*

- low levels of engagement in female-typical play in childhood, and higher levels of engagement in atypical and/or gender-neutral play (Schmitt-Rodermund & Christmas-Best, 1999).

*Personal qualities and life-view attributes*

- characteristics reflecting qualities such as 'determined pioneers', ambitious, agentic and individualistic (Gustafson, et al.,1992; Rocha, et al., 1996; Betz & Fitzgerald, 1987; Holland, 1973); positive orientation to the future (Cavalli, 1988).

*Involvement in household tasks*

- lesser involvement in routine household tasks; greater involvement may lead to stronger transmission of gender stereotyping (Grusec, et al., 1996).

*Pubertal timing*

- on-time or late pubertal timing; early timing linked to greater likelihood of following stereotypical career path, lower levels of education, and family not career orientation (Petersen & Crockett, 1985; Katz, 1986; Caspi, 1995).

*Age and composition of peer group*

- girls who choose atypical careers are not likely to have had a steady boy friend in early/mid adolescence or to have associated with older peers or peers who have left school; the converse correlates with early child-rearing and stereotypical career choice (Douvan & Adelson, 1966; Kessler, et al., 1987; Gustafson, et al., 1992).

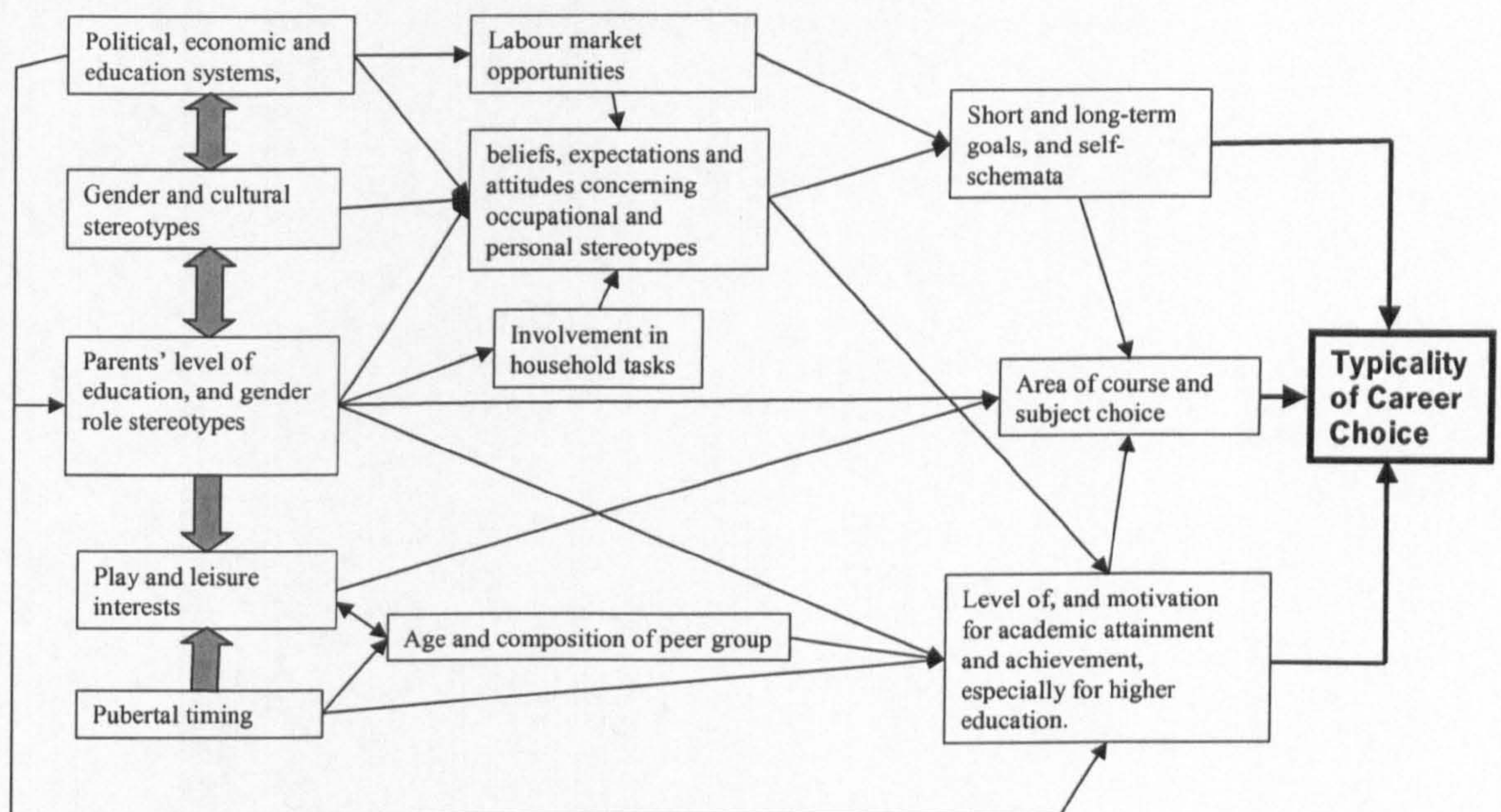
Hypothesis 3

It is expected that women who enter atypical careers will not be a homogeneous group and that there will be both inter- and intra-regional group differences in the motives and personal factors underpinning women's entry into atypical careers. In the interaction between internal factors and macro-contextual influences it is expected that the latter will predominate, i.e., that context will play the major role in typicality of career choice.



## Research model

By refining the information provided by the literature search and the theoretical models of Fassinger and O'Brien (1993), Betz and Fitzgerald (1987), Helen Astin (1984), Betz and Hackett, (1981), but primarily that of Eccles (1983 – see Appendix) a research model can be formulated to provide a framework for this research. As befits the theoretical underpinning of this research, the model adopts the concept of interaction between macro- and micro-contextual factors and the individual. The adapted theoretical model, therefore (see Diagram, 2:1) shows the expected interactions between micro- and macro-contexts and individual attributes leading to choices which impact on the typicality of women's career destinations.



Based on a model of achievement-related choices developed by Eccles (Parsons), Adler, Futterman, Goff, Kaczala, Meece, and Midgley, 1983

Diagram 2: 1: Adapted model of achievement-related choices influencing the typicality of women's career choice

Macro-context: this includes political, economic and education systems (their type and level of development) laws and regulations pertaining to employment and the labour market, labour market opportunities; and the cultural milieu (including religious beliefs).



**Micro-context:** this includes family background factors, such as parental SES (especially level of education); level of parental investment in their child's development and accumulation of social capital; gender stereotypes and beliefs, especially concerning occupational and personal stereotypes; gender role model, especially concerning mother's role and father's occupation.

**Individual:** this includes bio-genetic factors, such as pubertal timing; psychological factors, such as self-concept and self esteem; short and long term goals, and self schemata; past experiences such as play, leisure interests, involvement in household activities; level of and motivation for achievement, especially for educational achievement at a higher level; area of course and subject choice.

#### Implementation of the theoretical research model.

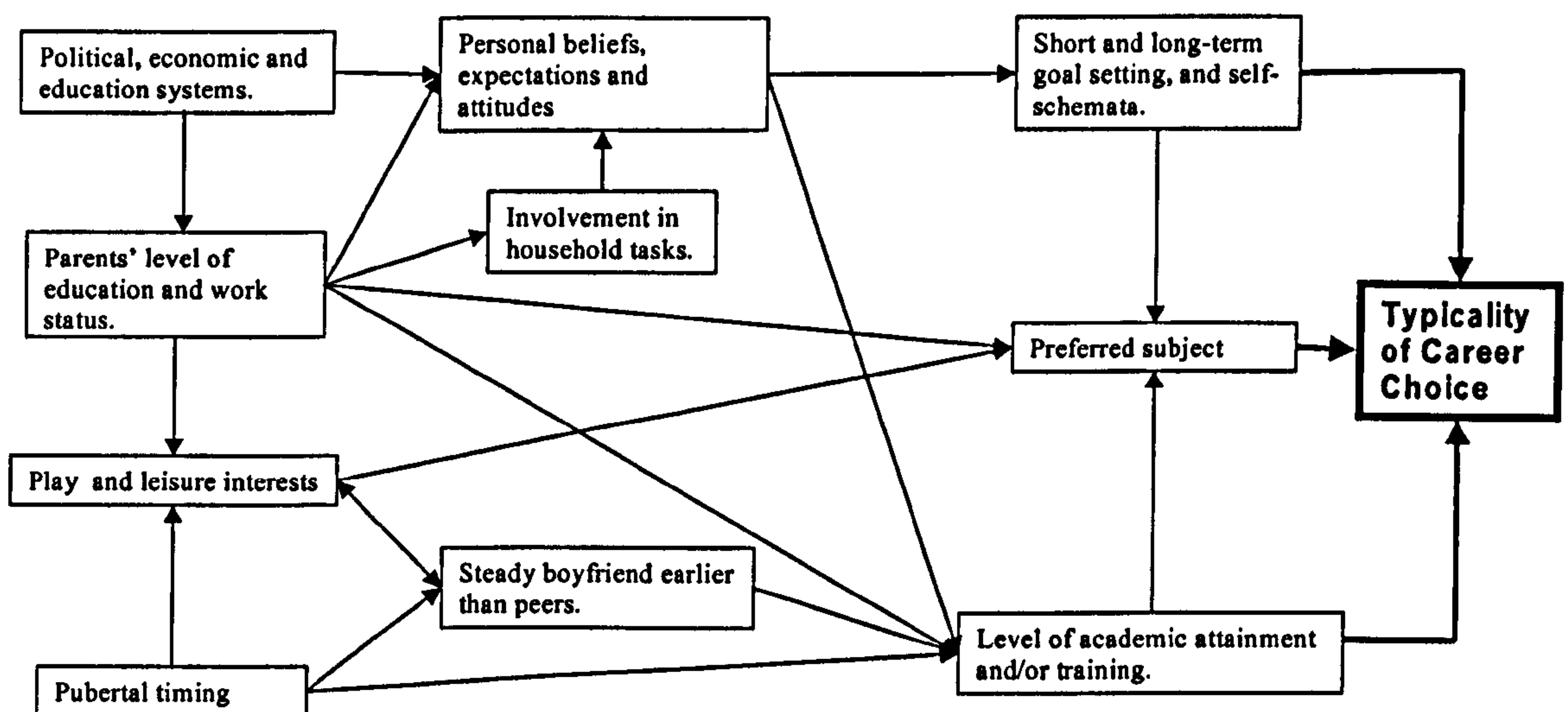


Diagram 2: 2: Theoretical model of factors involved in the atypicality of women's career choice.

As the model is necessarily complex, in order to test the hypotheses, the modus operandi will be an iterative comparison of the internal and external factors involved in the atypical career choice of women in East and West Germany using three levels of focus – national aggregate data, cross-sectional samples, and individual accounts. Points of measurement will be from 1981, through reunification in 1990, to 1997.



### Level 1: Analysis of aggregated national data

◆ In order to determine the structure of opportunity presented by the macro-contexts of both the former East and West Germany, aggregated data from the labour markets of the former East and West regions will be analysed (i.e., classified as female-atypical, gender-neutral, or female-typical) for 1981, i.e. some eight years before the collapse of the GDR, and again in 1997, i.e., some seven years after reunification when an effect of the transition to the West's system of economic organisation can be expected to be evident. For these analyses data will be taken from the national archives, from unpublished data, and from data provided by the respective national statistical offices.

◆ East/West differences in attitude to gender roles, especially to the role of women in the family and in work, will be compared using data from the ALLBUS<sup>21</sup> Baseline-Study 1991, and ALLBUS 1996.

### Level 2: Analysis of cross-sectional data

In 1991, as part of the Shell Youth '92 Study (Jugendwerk der Deutschen Shell, 1992) data were collected across the newly united Germany, from a cohort of adolescents and young adults who were born in the former FRG and GDR. Samples were not random (due to logistic problems directly after reunification) but selected to be representative of community size, levels of schooling and gender. Adolescents from East Germany and younger adolescents were over sampled to provide sub-group samples large enough for analysis. The data collection instrument was devised by a group of developmental psychologists (principal investigator: Professor Rainer K. Silbereisen) and covered all aspects of personal development, including information on career aspirations and career choice (Silbereisen, Schwarz and Rinker, 1995). The data were collected by a commercial research institute who interviewed the participants in their own homes.

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<sup>21</sup> ALLgemeine Bevölkerungsumfrage der Sozialwissenschaften (General population survey from the social sciences). Conducted biennially by the Central Archive for Empirical Research, University of Köln and the Centre for Survey Methods and Analysis, Mannheim.

Interviews lasted between 60 and 90 minutes and this, together with the overall sample size, give an indication of the richness of the resulting data set. In 1996, the survey was repeated using a modified instrument so that comparative analyses can be conducted. The resulting data sets are held by the Institute of Developmental Psychology, Friedrich Schiller University of Jena, Jena, Germany, and have been prepared for use by staff at the Institute.

### Sample Information

#### 1991 sample

1656 Adolescents (13 to 19 years)  
(W= 1074 of which 0 grew up in the East)  
(E= 582 of which 0 grew up in the West)

2174 Young adults (20 to 29 years)  
(W= 1471 of which 8 grew up in the East)

(E= 703 of which 1 grew up in the West)

#### 1996 sample

1424 Adolescents (13 to 19 years)  
(W= 694 of which 21 grew up in the East)  
(E= 730 of which 13 grew up in the West)

1809 Young adults (20 to 29 years)  
(W= 959 of which 50 grew up in the East)

(E= 850 of which 63 grew up in the West)

From these data sets it is proposed to draw a sample of 17-19 year old females from East and West Germany and to use it to confront a causal model, constructed using the structural equation modelling software programme AMOS (Arbuckle & Wothke, 1999) and based on the factors derived from the literature search as instrumental in women's atypical career choice. The model (see Chapter 3) will be tested at both time points (1991 and 1996) and separately for both East and West regions. Some aspects of the theoretical model, however, will not be able to be tested using these data sets. For example, data on the beliefs and attitudes of parents concerning gender role are not given, and only status not actual title of their occupations is given. Data concerning age and composition of peer groups were also not collected. Nevertheless they enable the



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greater part of the model to be tested and it has to be remembered that the data sets provide a unique and un-replicable insight into the beliefs, plans and activities of a large section of the East and West German population immediately after reunification, and again some five years later.

### Level 3: Analysis of individual biographical data

Accounts of work experiences and motives for career choice will be gathered from a sample of women from East and West Germany who are currently engaged in atypical careers via semi-structured questionnaire. The purpose of choosing this method of data collection is to be able to make comparisons with findings from the larger data sets as detailed in point 2 above. Therefore the same items used to collect data for the 1991/1996 data sets will be used but additional open questions will be included to gather the personal experiences, values, and influences underpinning atypical career choice. Moreover, questions concerning career changes and the motives behind changes, where they occurred, are expected to throw light on the more personal aspects of the interaction between the internal and external factors predicted as being influential in women's atypical career choice.

### **Summary**

This research draws on not one but several research methods from the social sciences. The main aim is not to try to provide any definite answer to the question of why women work where they do, but to add to the debate by exploring the question in two differing contexts, and by analysing data from a variety of sources. In short, the goal is to provide a broad but detailed insight into what factors, internal and external, influence the typicality of a women's career choice, and to examine how interaction may be affected by different political, economic and social systems – in other words, to what extent does atypical female career choice depend on personal factors or context?



### **Chapter 3: Structures of opportunity: The labour markets of East, West and United Germany, 1981 to 1997 as contexts for female-atypical occupational choice**

The first hypothesis posits that the context in which a woman makes her career choice will be instrumental in whether that choice is for a female-typical or atypical career. Where the macro-environment does not emphasise the traditional female role in society, especially concerning the woman as prime child-carer and where it actively supports an egalitarian economic role for women, women will be more likely to enter traditionally female atypical careers resulting in a more even distribution of women across occupations i.e. to lower levels of gender segregation in the labour force. Following this, and for reasons detailed in Chapter 2, it is expected that East Germany prior to German reunification will have been a more supportive context for women's atypical career choice than West Germany at that time, but that following reunification it will have become less supportive as it adapted to the West's market-lead economy. To test these assumptions, and to establish the structure of opportunity for women's atypical employment presented by East and West Germany over the period in question, aggregate data detailing the occupational distribution and concentration of women in both regions for 1981 and 1997 will be analysed. From these analyses the range of occupational areas that were easily accessible to women (i.e., typical), within reach (gender neutral) and difficult to access (atypical) can be determined for each region at both time-points. From these findings, regional variations in the structure of opportunity for women's atypical career choice and changes over time can be noted. Where possible, the structure of opportunity in terms of hierarchies of skills (i.e., the respective percentages of women in professional<sup>1</sup> and non-professional occupations) and women's

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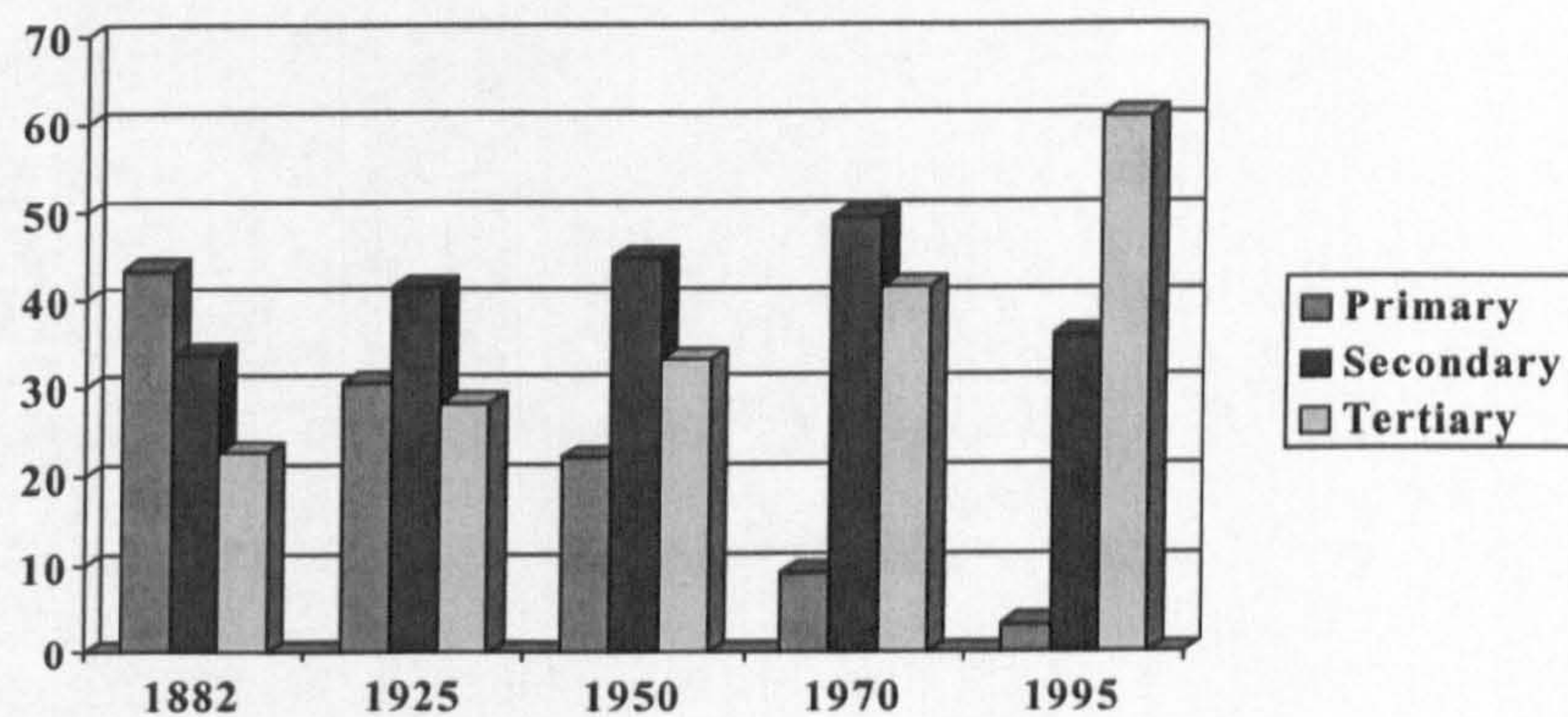
<sup>1</sup> Taken here as, *professional* = university level education required for the job; *non-professional* = all other work.



visibility in the occupational groups selected by Anker (1998 – see end of this introduction) as representative of traditional male-dominated occupations in OECD countries, e.g., engineers and technicians, will also be analysed in each region.

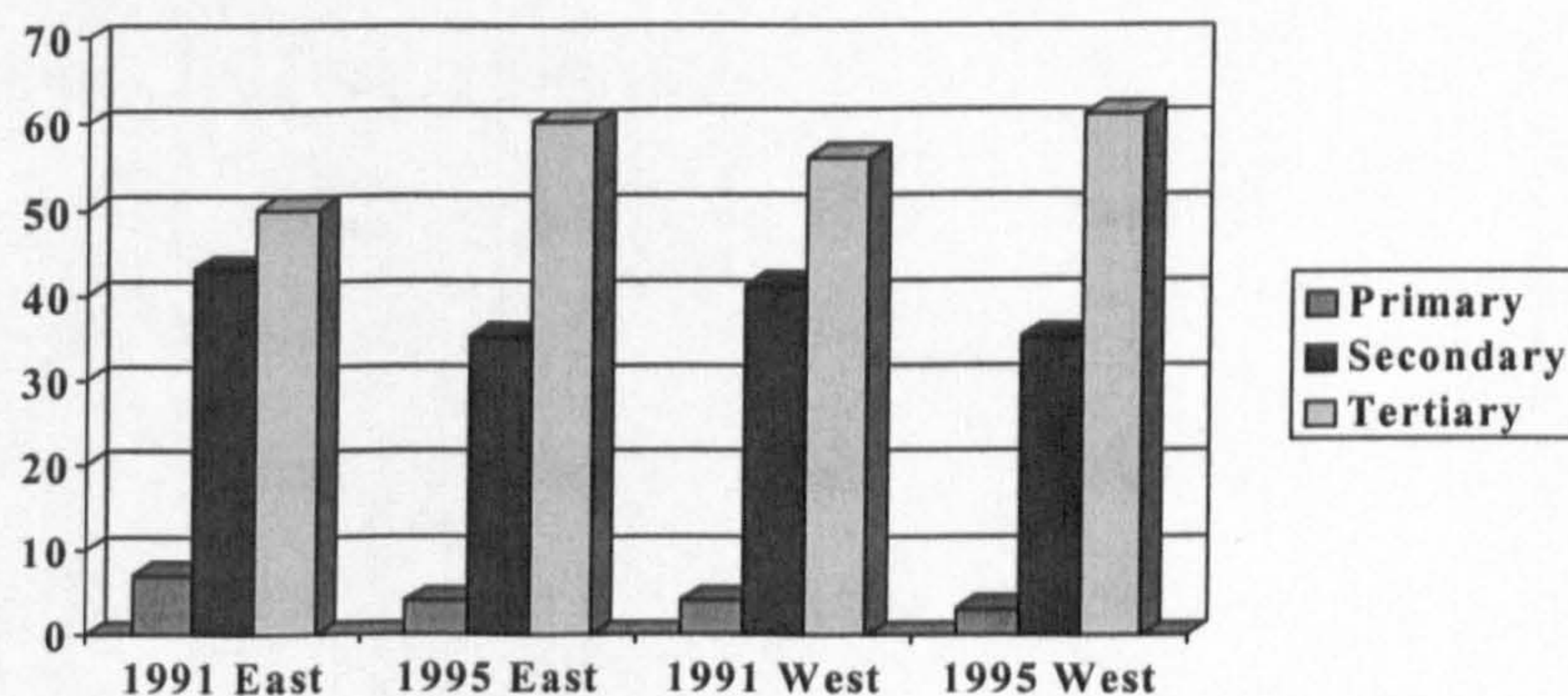
### Background overview

Trends across the 20th century show that Germany followed a predictable path of economic sector development (Fourastié, 1949) in that, during the process of modernisation, the primary sector (agriculture, mining etc.) declined, the secondary sector (manufacturing industries), after initial expansion, began to fall back, whilst the tertiary sector (service industries) increased (see Diagram 3:1).



Source: Datenreport 1997, p83  
(data for 1950 and 1970 refer only to the former FRG)

Diagram 3:1: Economic sector development in Germany. Percentage of workforce by economic sector



Source: Datenreport 1997, P83

Diagram 3:2 East/West Germany economic sector development post reunification: % of employed by economic sector



When developments for East and West Germany for the period 1991 to 1995, (see Diagram 3:2 and Table 3:1) are compared, the same pattern can be observed but what is also obvious is the very different rate of development between the two regions during this time. In comparison to the West, developments in the former GDR were more marked, particularly in terms of an extreme decline of the primary and a more pronounced increase in the tertiary sector.

	changes in % employed from 1991 to 1995	
<b>Economic Sector</b>	<b>East</b>	<b>West</b>
Primary	-43%	-14%
Secondary	-14%	-12%
Tertiary	+18%	+9%

Source: Datenreport 1997, P83

Table 3:1: Economic sector developments in East and West Germany from 1991 to 1995

Given the East's transition in 1990 from a centrally planned economy (which had had the effect of propping up the primary and secondary sectors, partly for ideological reasons) to that of the West's market economy, the differences in the rate of developments are not so surprising. However, the important point for this work is that these differences in economic sector development are indicative of one facet of structural change within the labour markets<sup>2</sup> of both regions of Germany that will have had an impact on the contexts within which women were making career decisions, and consequently have resulted in differences in the structure of opportunity for women in the respective regions. In addition, an increase in the pace of globalisation, as well as the extension of the influence of the European Union, will have had an impact on developments in both the East and West. As Crompton, Gallie and Purcell (1996) explain:

In general, there are overall changes in the organisation and functioning of labour markets world-wide, so that in Germany

<sup>2</sup> The use of the term 'labour market' is problematic when used in the context of the GDR as it was not a market situation in terms of labour being bought and sold. However, for ease of discussion, it will be used whenever the term 'labour force' is not suitable, or when referring jointly to the East and West.

changes can not just be seen in terms of workers in the East experiencing the move from a Marxist centralised economy to a free market economy, but also the labour markets of the West changing from an 'institutionalist' economy, whereby professional institutions such as firms and unions, provide 'shelter' for their members, offering jobs and security for life to a more production-driven economy, with fragmented institutions, and minimal 'shelter'. For the East too, the move from autonomous market control towards market developments that are influenced by the actions of other, wider international forces, may be more problematic.

In 1981, however, differences in the direction of economic development were both the result of, and to some extent, crucial to, the ideologies of the two regions. The West had developed hierarchical social and economic structuring, based on free enterprise and the ideal of the Christian family (with the gender-typical roles of mother nurturing and father providing), and with a limited degree of state interference in the lives of its citizens. In the East, the aim was for a flat structured society with everyone working for the collective good, of collective production controlled by the state, which also exerted a very strong influence over almost all aspects of daily life, including parenting and childcare. Thus society in the West had different needs, requirements and expectations from that of those East, and these differences were reflected in the structure of the respective labour markets.

Differences in production methods East/West during the time of separation also affected the structure of opportunity for women. For example, the West was technologically more advanced, and the East maintained more-labour intensive modes of production, both of which had inevitable consequences for the deployment of labour – both male and female. However, although these differences indicate that the workforces of East and West Germany, at least up to the time of reunification, would have been distributed differently across the economic sectors, what is pertinent to this work is the degree to which this distribution was gender segregated, and to what extent



the structure of opportunity for women's atypical career choice provided by these two systems differed.

Concerning the comparison of occupational typicality, comparisons of occupational data across countries and across time are prone to difficulties arising from the varied approaches that can be taken to the collection and presentation of occupational data (Anker, 1998). For example, different sources of data, such as from census or from labour force surveys, may be used, and the degree of aggregation, classification schemes, coding of occupations etc. may vary. Differences can also occur as to who is included in the data collection process - sometimes only those actually employed are included, whereas others may include those currently unemployed but registered for work; the inclusion of military forces and other security personnel can also vary. Further, differences can occur in what is considered as work; the treatment of informal jobs, family helpers in family firms, jobs with low weekly hours, are particularly problematic.

Unfortunately, the occupational data for the GDR and FRG in 1981 are no exception. Although their occupational classification systems are similar in many respects, there are some fundamental differences concerning categorisation of workers (see regional sections for details). In such circumstances, mapping the different data onto one 'blueprint' is helpful to produce a standard basis for comparisons and the obvious choice was the International Standard for the Classification of Occupations (ISCO). However, unlike the ISCO, the occupational classification systems of the GDR and West Germany were both organised by economic/work areas, rather than being hierarchically arranged by the constituent tasks and duties of jobs and the abilities required to implement them, so that attempts to reclassify groups to provide more comparable occupational systems proved unworkable. Therefore, as there was a reasonable degree of similarity between the two German systems in 1981, and as the

data for the West in 1981 and the East and West in 1997 utilised the same system of occupational classification, it was decided to analyse the data in their original format. This decision was taken on the grounds that, although statistical comparisons with the East in 1981 would be somewhat problematic, analyses would still inform the question of the structure of opportunity in each region. Nevertheless, comparison between the East 1981 results and the other contexts must be approached with caution to avoid over interpretation.

With regard to the measurement of gender segregation, as detailed in Chapter 2, a measure of typicality was established whereby occupations  $\leq 30\%$  women were to be considered as atypical, between 31% and 69% as gender neutral, and  $\geq 70\%$  as typical. However, this measure has the drawback of being rigidly defined so that a difference of one percent in the concentration of women in an occupation (where that occupation is on the border between categories) can result in re-categorisation. To offset any distortion that this might introduce into the regional comparisons, additional measurement techniques were investigated. A widely used measure is the Index of Dissimilarity (ID)<sup>3</sup>. Established by Duncan and Duncan in 1955, it became popular not least because of its relative simplicity in calculation and ease of use. However, this measure has been criticised because of disagreement over its correct interpretation<sup>4</sup> and because it is very sensitive to the number of classifications used in its calculation i.e. different results will be gained for the same labour force at different levels of aggregation. Especially problematic for this work is that traditionally male-dominated occupations are more likely to have a greater degree of disaggregation than those of

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<sup>3</sup> Formula for the calculation of the Index of Dissimilarity =  $\frac{1}{2} \sum_i |F_i/f - M_i/m|$  Key: F = female, i = occupational category, and f = total number of females in the workforce; M = male, i = occupational category, and m = total number of males in the workforce. The ID value is half of the total sum of the absolute value of i from each calculation. — see Anker 1998 for further details

<sup>4</sup> ID is commonly said to represent the number of women OR men who would need to move from typical to atypical occupations in order for the labour force to be equal in terms of gender distribution but others



females<sup>5</sup>. Further, the level of segregation indicated by the ID value can change over time for reasons other than because of changes in the genderfication of occupations, for example because of changes in the structure of the labour force and/or its classification.

Another measure said to avoid such problems, especially that of changing occupational structures over time, is the Marginal Matching index (MM). Here, the number of workers in female occupations is 'matched' (made equal) to the number of women in employment, and similarly for male occupations so that it is unaffected by changes in the gender composition or occupational structure of the labour force (Blackburn & Jarman, 1997). However, it is not recommended for use where the overall percentage of women active in the labour force is low and has not been proven where the percentage is high (Anker, 1998) – which applies to both West and East, respectively, in 1981. One other measure - the Gini coefficient - has been cited as a useful alternative to the MM (Blackburn & Jarman, 1997, also citing Blackburn, Siltanen & Jarman, 1995). This is based on the Lorenz Curve<sup>6</sup> and shows the degree of inequality in a frequency distribution. Used primarily in the calculation of the concentration and distribution of wealth across a population, it is also a useful measure of distribution and concentration in other fields, such as that of women within a labour force. (See, for example, Marais, 1995, where a Lorenz-curve framework is used to measure the equality of resource allocation in education.) As the Lorenz Curve provides a graphical representation of the degree of female concentration across occupational

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argue that the measure indicates how many women AND men would have to move. (See Anker 1998, index to Chapter 5)

<sup>5</sup> For example, in the West's classification scheme, the metal industry (which is typically male dominated) has 21 sub-main categories, while administration (which is typically female dominated) has only 7.

<sup>6</sup> The Lorenz Curve is calculated by first ordering (lowest value to highest) the total number of workers in each occupational category as a percentage of the total number of workers in the labour force, followed by the number of female workers in each category as a percentage of all female workers in the labour force (or sample). A cumulated list is produced from each ranked list: the data is displayed graphically; the greater the span between the diagonal (representing a completely equal distribution) and the line representing female distribution, the greater the inequality of distribution. The Gini coefficient is a measure of the equality of distribution.

group, and the Gini coefficient provides a measure of segregation that is not subject to the same rigid boundaries of the measure of typicality, it was decided to include these additional measures to support the regional comparisons.

Finally, the level of aggregation at which all analyses should be conducted needs comment. It has been shown that the calculated level of occupational segregation is very sensitive to the number of occupations classified, and thus to the level of aggregation used in the analyses. Calculations based on very high levels of aggregation, e.g. at the one-digit (major occupational group) level, as are typically found in statistical year books or economic summaries, often distort the degree of gender segregation. As the main focus of this investigation is to provide a clear picture of the context within which women were making their career choices, analyses will be carried out at the lowest possible level of aggregation. However, in the interest of rigour, analyses will also be carried out at the highest level of aggregation (which for both the GDR and the FRG equates most closely with the ISCO 2 digit level) although results of these analyses will only be commented on briefly.

Before commencing the regional investigations, it should be emphasised that, although the measure of typicality, Lorenz curve and Gini coefficient will be used for each region, and at both levels of aggregation discussed above, it is not the intention to become embroiled in the intricacies of gender segregation measurement. Rather the intention is to interrogate the data to determine the extent to which the region under investigation supported women entering atypical careers. This is taken as being a context where most workers are working in gender neutral occupations —indicating a more even distribution of males and females across the labour force, and thus access to a wider range of occupations. Somewhat counter intuitively, this means that a region where fewer occupations are atypical for women will indicate easier access to traditionally male-dominated occupations. Linked to this, the level of female penetration



into certain traditional male-typical areas will be compared, for which seven of the eight male-typical occupational areas given by Anker (1998, p258) as representative of enduring male-typical occupations in OECD countries will be used as a guide: These are (with amended titles to suit the German occupational classification system given in parentheses):

- Architects, engineers and related technicians (engineers and technicians)
- Legislative officials and government administrators (leaders)
- Managers
- (Sales supervisors and buyers – not used)
- Protective service workers (security)
- Production supervisors and general foremen (Meister)
- Blacksmiths, toolmakers etc. (metal industry workers)
- Bricklayers, carpenters and other construction workers (construction industry workers)

## **East Germany : Structure of opportunity for women in the labour force of the GDR: 1981**

The population census for the GDR in 1981 gives there as being just over 5 million women of working age. Of these, just over 86% were in employment, and constituted 49% of the entire labour force: only 2% (n=112213) are given as 'not economically active'<sup>7</sup>. In order to ascertain the extent of gender segregation in the labour force of the GDR, and where and at what skill level women were working, data were taken from the GDR's population census<sup>8</sup> of 1981. This was only available as a confidential report<sup>9</sup> concerning the occupations for which people had trained and in which they were actually working. These data<sup>10</sup> are particularly useful because, unlike the aggregated data given in year books and other published reports, the figures reported are actual not rounded and are given to a low (four digit) level of aggregation.

### Data Organisation

The report covers the working population of the GDR in 1981 (n = 9080247; of which females = 4367556) and is structured according to the occupational classification scheme of the GDR. At the highest level of aggregation occupations are organised into 40 main groups (see Table 3:2): Of these, 36 are directly related to specific economic/work areas, the other 4 (referred to here as the 9000 codes) relate to particular status groups. All of the main classifications (except for the 9000 codes) are divided into sub-main groups (n=216) based on training or qualification level. Where sub-main groups are particularly large (n=83) they are further divided into minor categories,

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<sup>7</sup> Not including trainees, mothers with maternity leave or those with early pensions.

<sup>8</sup> Ergebnisse der Volks-, Berufs-, Wohnraum- und Gebäudezählung (Results of the population, occupation, accommodation and buildings survey). Central Administration for Statistics of the GDR, 31 December 1981.

<sup>9</sup> Angaben über Wirtschaftlich Tätige in ausgewählten Berufen nach erlerntem Beruf und ausgeübter Tätigkeit (Details of those economically active by learned occupation and current occupation) Central Administration for Statistics of the GDR, 31 December 1981.

<sup>10</sup> Provided by the Deutsches Statistisches Bundesamt Berlin in hard copy format and transformed into machine-readable form by the author.



showing differentiation at the same skill or qualification level. At this, the lowest level of aggregation, there are 310 separate classifications, which are labelled with a 4 digit code. For example, the occupational code 0811 breaks down as follows: 0800 is the code for the main occupational group - Biological Sciences; 0810 is the code for the sub-main occupational group – biotechnology skilled workers; 0811 is the minor category code (i.e., the lowest level of aggregation, approximate equivalent to the ISCO 4 digit level) for skilled bio-technical workers involved in laboratory work. (For a fuller breakdown, see Appendix for Chapter 3, Table 1.)

Occupational Category Code	Occupational Classification Group	Occupational Category Code	Occupational Classification Group	
200	mathematics	4200	leather/artificial leather	
400	physics	4400	glass/ceramics construction.)	(ex.
600	chemistry	4600	food industry	
800	bio sciences	4800	trade/gastronomy/service	
1000	geo sciences	5000	land/forestry/ fisheries	
1200	psychology	5200	water economy	
1400	human med./ pharmacy	5400	building materials	
1600	veterinary medicine	5600	building	
1800	mining	5800	traffic and transport	
2000	energy	6000	post & telecommunications	
2200	metallurgy/material sciences	6200	admin, organisation, economics	
2400	machine etc construction	6400	philos. & hist. sciences; .law	
2600	production and processing	6600	culture and art	
2800	precision optics/mechanic	7000	education	
3000	electronics	7800	literature & language sciences	
3200	automation technology	8000	theology	
3400	wood	9100	leaders	
3600	cellulose and paper	9200	department officials	
3800	reprographics	9300	active in other professions	
4000	textiles and clothing	9900	employed-no cat given	

Table 3:2: Main occupational groups

#### The 9000 Codes:

The 9000 codes cover four main groups: Whilst three are self-explanatory (see Table 3:2) one (code 9300) is particularly interesting. This includes workers who are ‘active in other professions’ and is broken down into 2 sub-main groups – occupations concerned with mental tasks and those dealing with physical tasks. It is likely that this contains the

notorious 'sector X' i.e. the state security apparatus, including the state secret police, and associated workers (Best & Hornbostel, 1998).<sup>11</sup> This 'hidden' group is estimated to have accounted for some 7% of the working population, and as code 9300 contains 6.4% of the population in the data set, given the enigmatic labelling of the sub-main categories, it seems likely that this is indeed sector X. However, it is not possible to be certain and it should therefore be noted that this could obscure some of the degrees of variance which occur in the data.<sup>12</sup>

With regard to the analyses, the 9000 groups are somewhat problematic in that they differ from the other categories and do not represent occupational but status groups. One consideration was to redistribute them but, whilst some are linked to a main occupational area, such as code 9210, which contains department officials in traffic and transport, it was impossible to assign them all with any accuracy to specific occupational areas. It was decided, therefore, to include the 9000 codes (except for code 9900 = 'miscellaneous, no category given') in the analyses as they were, with the same caveat concerning the interpretation of results given earlier.

## **Gender segregation in the Labour Force of the GDR: 1981**

### Highest level of aggregation

The results of analysing the dataset (minus group 9900) at main occupational group level, using the measure of typicality, are shown in Table 3:3. As can be seen, although the majority of males and females work in concentrations where members of the

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<sup>11</sup> The GDR was a very guarded society and country, overtly through its militia and police, but also covertly through the Stasi (state secret police). People active in these occupations are not referred to directly in GDR statistics but are either left out or are hidden, and are referred to by researchers into this area as 'sector X'. In the case of this report (which is marked as 'vertraulich' i.e., confidential and not therefore for general circulation), the latter is most likely.

<sup>12</sup> It is possible that other groups are 'hidden' within the 9000 categories. For example, the percentage of the labour force within agriculture, fishery and forestry is 6%, which is less than is known to have been the case. Calculating the percentage using the Year Book of the GDR for 1990 the percentage of workers in this area was probably closer to 10%. It is likely that a special category of worker, the 'Genossenschaftsbauern' (co-operative farmers) are not included in the main category covering agriculture, (code 5000). The 'Genossenschaftsbauern' are particularly interesting: Prior to WWII they were small private landowners and, unlike the Junkers or large Estate owners, whose land was generally



opposite sex constitute 30% or less of their co-workers, more occupational groups are gender neutral than are male or female dominated, and account for the largest share of all workers.

	% all women workers	% all male workers	% all workers	% all occupational groups
<b>Atypical</b> ≤30% women	10	52	31	31
<b>Gender Neutral</b> 31% - 69% women	38	40	39	46
<b>Typical</b> ≥70% women	52	8	30	23

Table 3:3 GDR 1981: Highest level of aggregation: Workers and occupational categories by percent, as distributed according to the measure of typicality.

When the occupational categories that make up the three different classifications of typicality are examined (see Table 3:4) what is immediately obvious is that the nine female typical occupational areas encompass the occupations suggested by Anker (1998 p254; see also Neft & Levine, 1997) as typically female worldwide (nurses, office and administration work, sales, cooks and food service, hairdressing and related service, tailors and related work). The very high concentrations of women in four of these groups (approaching 90%) is particularly noteworthy, as is the fact that these four categories alone account for 42% of all women workers.

The main occupational groups measuring as atypical comprise two of the areas suggested by Anker (1998) as most likely to be male-dominated, i.e. the construction and metal industries. However, the other atypical groups are also areas that can be thought of as traditionally male-dominated, especially mining, electronics, traffic and transport, and energy, with perhaps the exception of theology. This rather enigmatic occupational area is very small and only accounts for 0.01% of the labour force. Given the GDR's secular ideology, this is not surprising, but the percentage of women

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claimed by the GDR and redistributed, they were given special status as members of the LPG and allowed to claim a share of the produce from the land, even being able to pass on their claim to their dependents.

engaged in this area is lower than might be expected given the East's former Protestant affiliations and the strong role of women within this confessional area.

<b>Occupational Group (Atypical)</b>	<b>%female</b>	<b>Occupational Group (Gender Neutral)</b>	<b>%female</b>
construction	6	geo sciences	33
machine construction	8	leaders	33
mining	9	mathematics	42
energy	11	food industry	42
metallurgy/material science	14	glass/ceramics (excluding building industry)	46
theology	15	land/forestry/ fisheries	47
electronics	17	active in other professions	47
wood	17	philosophy/history/science and law	49
water industry	20	culture and art	49
metal product + process	21	veterinary medicine	50
traffic and transport	22	precision optics/mechanic	51
construction materials	29	physics	53
<b>Occupational Group (Typical)</b>	<b>%female</b>	department officials	54
leather/artificial leather	72	automation technology	58
literature and language sciences	74	paper industry	60
bio sciences	75	reprographics	63
post and telecommunications	75	psychology	66
education	78	chemical industry	67
textiles and clothing	87		
human med./ pharmacy	88		
trade/gastronome/service	88		
administration, organisation, economics	88		

Table 3:4: GDR 1981: Highest level of aggregation: Distribution of main categories by measure of typicality by % female of workers in each category

Returning to the occupations suggested by Anker as being most likely to be male-dominated, at this level of aggregation it is not possible to track the situation concerning engineers and related technicians, nor production supervisors et al. These are distributed throughout the occupational groups to which they belong, and will be examined as part of the investigation at the lowest level of aggregation.

If security workers are taken to be the 9300 group (see discussion of 'sector X') then this group is gender neutral<sup>13</sup>, as are legislative officials (taken primarily as group 9100 – 'leaders' but also as part of group 6400 – philosophical and historical sciences

<sup>13</sup> If this group is the security forces of the GDR – then its measurement as gender neutral is likely supported by the fact that ancillary staff, such as drivers, telephone operators, cooks and cleaners, are also



and law) and managers (taken as group 9200 – department officials). Several other occupational groups that measure as gender neutral are also important to note: In the occupational areas of mathematics and physics, which have been strongly associated with the under-representation and the atypical career choice of women (Eccles 1994) women are well represented (42% and 53% respectively). Another area associated with the under-representation of women is technology. Taking automation technology (code 3200) as a technological field, here again, there is a strong female presence (58%). Internationally, the chemical industry is also more male- than female-dominated, and it is worth noting that in the GDR, at this level of aggregation, 67% of the workforce were women so that this category only narrowly avoids being classed as female-typical.

#### Lowest level of aggregation

The results of analysing the dataset at the lowest level of aggregation (comprising 437 categories, with the 6 belonging to main code 9900 removed) can be seen in Table 3:5. First of all, as was expected, a different pattern of distribution and concentration of women workers is seen, and a clearer picture of where and at what level women were working. However, changes overall are slight with the greatest change being the concentration and distribution of women, and the percentage of occupational groups now classed as female-atypical and gender neutral; the percentage of female-atypical occupational areas has increased, whilst that of occupational areas measuring as gender neutral has decreased: Fewer women are also found concentrated into these areas. On the other hand, whilst the percentage of categories measuring as typical remains the same a greater percentage of women are employed therein. Nevertheless, taken that the best measure of gender segregation is the percentage of workers working in areas considered to be gender neutral, then one would have to conclude that statistically the level of gender segregation remains much the same at both levels of aggregation, albeit

that approximately 60% of the workforce still work in areas where the chance of working alongside a member of the opposite sex is 30% or less.

	% all women workers	% all male workers	% all workers	% of occupational groups
<b>Atypical</b> ≤30% women	4	50	28	41
<b>Gender Neutral</b> 31% - 69% women	37	44	40	36
<b>Typical</b> ≥70% women	59	6	32	23

Table 3:5 GDR 1981:Lowest level of aggregation: Workers and categories by percent, as distributed according to the measure of typicality.

When occupational groups which were atypical at main category level are examined at this lower level of aggregation, in the specific occupations selected by Anker as representative of male-dominated occupations, i.e., blacksmiths (3%), toolmakers (10%), bricklayers (0.7%), carpenters (0.7%) and other construction workers (10%), as can be see from the percentages of women given in parentheses for each area, women in the GDR were also under-represented. However, in some areas within the construction and metal industries women showed a greater presence. For example, in the construction industry, women comprised 96% of architectural drawers. In the metal production and processing industry they accounted for 51% of all workers in the sub-main category 'metal dressers', and in the metallurgy industry most 'testers' (63%) were women. Similarly, in the machine and plant construction industry, women do not exceed the 8% average in 16 of the 24 sub categories, but as machine-related technical drawers, and as assembly co-workers, they exceeded the 70% marker for typicality, working in concentrations of 95% and 72% respectively. Likewise, in the wood industry they were predominantly basket and brush makers (80%), and in the electrical industry they were either working as electric circuit drawers (83%) or as cable producers (67%). In the mining industry, women are heavily underrepresented in most sub-categories, but their numbers do creep into the range of gender neutral as unskilled workers (mining co-



workers: females = 32%). When this is examined in greater detail, one can see that what women were actually doing was processing work, where, at 69%, the concentration of women almost reaches typicality. In fact, the important point to note for all areas where women are found in larger concentrations in these otherwise male-dominated areas, is that many involved semi or unskilled work, and others, such as architectural drawers, represent female enclaves in otherwise male-dominated occupations. Taking the construction industry and metal industries again as examples, analysis shows that in both women are predominantly engaged as unskilled workers: In the former, 6% of skilled and higher status workers are women, whereas they account for 10% of unskilled; in the latter, they comprise 15% skilled and higher status workers, but 45% of unskilled.

Two other occupations used by Anker as examples of traditionally male-dominated areas are those of engineers and technicians. At this lower level of aggregation it can be seen that, far from being male-dominated, in the GDR, women were well represented in both areas. As engineers, women were evident both with Fachschule (FS = technical college for specialist further education) and Hochschule (HS = university) level qualifications. However, before discussing the employment of women as engineers, the use of the title 'engineer' and the two levels of qualification (FS and HS) need explaining. First, the use of the title engineer in occupational group labels may sometimes be misleading: Given the ideology of the GDR concerning the qualifications of its workforce and its association with the image of physical labour, the term would seem to have been used in broader sense than used in other countries, such as Britain and America. In Germany as a whole, there is the tendency to use the title 'engineer' for some occupations not connected to the usual understanding of the term, for example 'economic engineer' (Wirtschaftsingenieur), media engineer (Medieningenieur), and environmental engineer (Umweltingenieur). Here, the term

engineer is used to describe occupations which 'translate' or link the theoretical processes of the area concerned into technical processes.

The separation of occupations labelled as 'engineer' into those with FS and those with HS qualifications goes some way to clarify the situation in the GDR. Of the 75 categories at the lowest level of aggregation that include the title 'engineer', 30 refer to engineers with HS level qualifications and 45 refer to engineers with FS level qualifications. Regarding those with FS qualifications: In the GDR there were two quite distinct types of Fachschule. One was for those who had already completed vocational training and wished to gain further qualifications. This was typically achieved through distant learning courses or by attending night school classes<sup>14</sup>, although full-time courses were possible: Women were especially encouraged to make use of the distant learning facility (Gesetzesdokumentation, 1973). When training was complete, students were classed as 'Absolventen die Hochschulreife' (equivalent to passing the Abitur) and it was within this type of institution that those with FS engineering qualifications were trained<sup>15</sup>. Thus, workers referred to as 'engineers (FS)' were those qualified to the equivalent of A-level standard, and conceptually the work undertaken was perhaps better understood as that of specialist technicians. This is, in part, supported by the data. For example, sub-main category 850 is labelled Bio-engineers (FS) but the two minor categories, 851 and 852, are both listed as technicians i.e., bio-technicians and bio-medical technicians.

In the data set women are better represented as FS engineers than as HS engineers, whereby they account for 34% of the former and 27% of the latter. Nevertheless, in international perspective, both FS and HS engineers are atypical areas for women, and out of the 75 sub-category or minor occupational areas given the title of

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<sup>14</sup> Training under these schemes usually lasted for four and a half years (three years for full-time courses).

<sup>15</sup> The other type of Fachschule was for school-leavers to undertake their initial vocational training and was typically for full-time students.



engineer (see Appendix to Chapter 3, Table 2), 56% are either gender neutral or female typical. In fact, in several of the main occupational areas that are female atypical, the percentage of women engineers is above the 30% atypical threshold: Within the construction industry, 31% of civil engineers (HS), 38% civil engineers (FS) and 41% of railway construction engineers (HS), are women; and in construction materials production 33% of engineers (both FS and HS) are women. In particular, even in an extreme male-dominated area such as mining, 21% of engineers with university level qualifications (HS) are female.

Turning now to women working as technicians, the exact position is not easy to calculate because of the diverse terminology used in the occupational descriptions given in the GDR data. For clarification it was necessary to turn to an additional source of information – the Regulations for Skilled Workers (December 1984, Berlin) – which details the training requirements for skilled worker occupations. Here it is clearer which occupational codes refer to technicians, or as they are most often referred to, laboratory skilled workers. These are primarily found in the main categories of health, the chemical industry, biological and physics related areas, food and metal industries, and are listed in Group 1 Skilled workers, i.e., those who will have a minimum of two years training (two and a half years in most cases) and have achieved the 10<sup>th</sup> Class Leaving Certificate (GCSE level) to begin training. When these are analysed, as shown in Table 3:6, the majority are heavily female-dominated and none is atypical. Overall, 92% of these categories are made up of female workers.

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Occupation	% female
dental technician	83,0
physics laboratory skilled worker	65,0
laboratory technicians (chemical, photo, metal)	95,0
foodstuffs laboratory skilled worker	94,0
bio lab preparation (diagnostic and experimental)	94,0
dental technician skilled wk	83,0
medical autopsy technician	34,0
medical technical assistant	96,0
medical specialist technician	60,0

Table 3:6: East 81: Technicians and laboratory workers by female percent of workers

Continuing with the occupations suggested by Anker as traditionally male-women are well (if not over) represented as leaders in health (85%) and in trade and service (63%); more equally represented as leaders within education (46%) and art and culture (41%); less likely to be leaders in the area of administration and finance (32%); and significantly under-represented in leadership positions in traffic and transport (6%) and construction (4%). While this generally ties in with the pattern of typicality within the occupational groups themselves, it is also clear that female domination of occupational areas, such as administration and finance, and education, did not automatically mean a high representation of women at leadership level.

These findings that women's representation in higher status positions in the GDR was not proportional to their representation in the workforce in general, or to their presence in an occupational area, is confirmed and clarified further by other research in this area. In their work with the Zentrale Kaderdatenspeicher<sup>16</sup> des Ministerrates der DDR (Central databank on management personnel of the GDR), Best and Hornbostel (1998) have shown that, despite specific directives from the Central Committee<sup>17</sup>, and legislation, concerning the promotion of women in leadership positions, women in the

<sup>16</sup> The 'Kaderproject' of the GDR was started in 1972 and from 1976 data were held by the Ministry for Science and Technology under the title of Zentraler Kaderdatenspeicher (ZKDS) - Central Database of Leadership Personnel. This was updated quarterly with information gathered monthly and held in the Arbeitskräftespeichern (AKDS) -workforce database.

<sup>17</sup> "The development of the role of women in our socialist society is dependant on every directing organisation and each leader therein doing their duty and increasing the number of women in leadership positions. It must be the aim of every leader to promote women to be come 'functionaries' and to pay



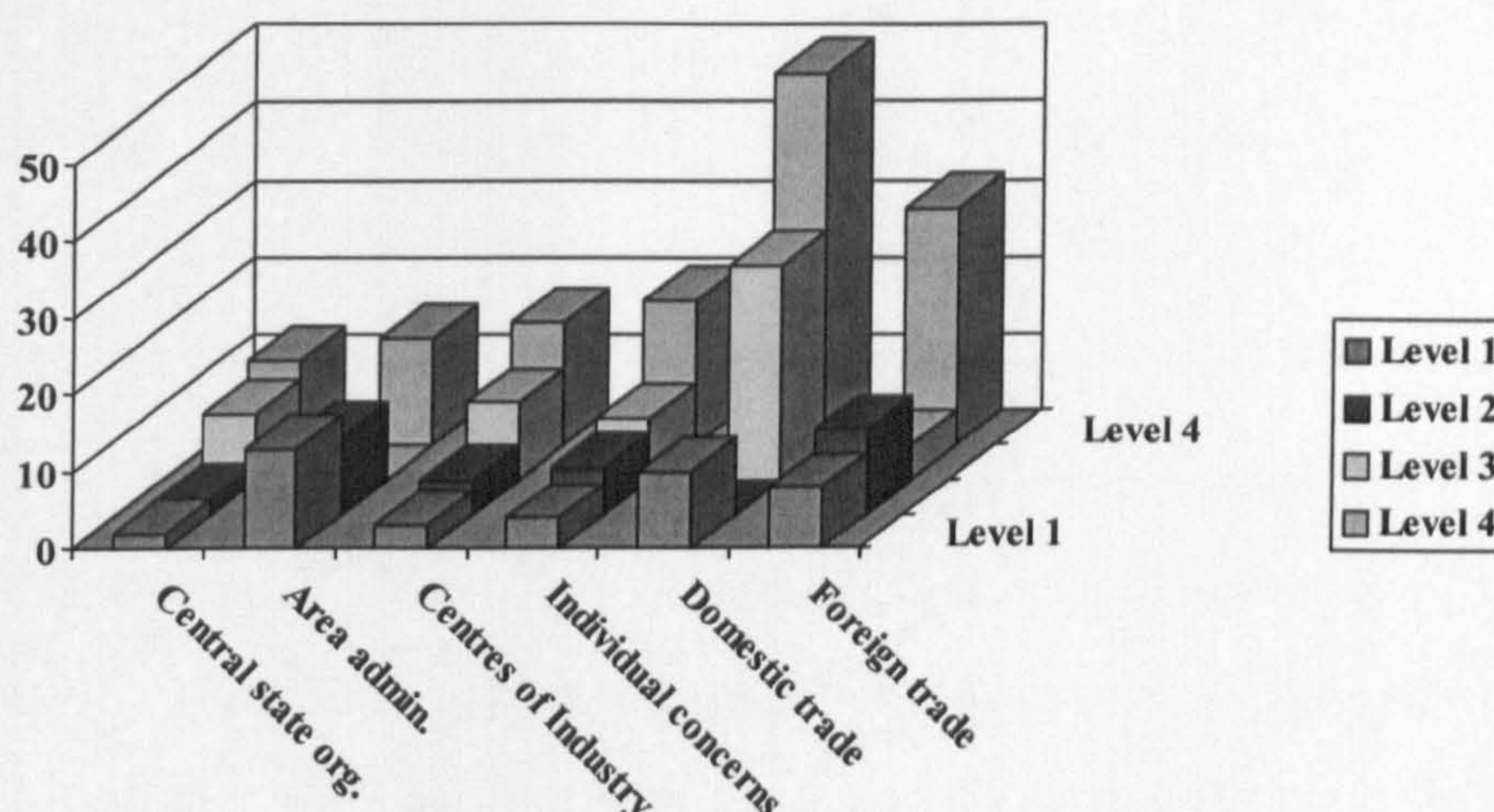
GDR remained under-represented at leadership level. As they point out, at first sight 24% of women within the general category of leadership positions could be seen as significant when compared to the proportion of females in similar positions in the West. However, when the data are analysed by functional area and level of hierarchy, a pattern emerges whereby there is a distinct correlation between the level of leadership, the importance of the area in question, and the representation of women: the higher the position and the greater the importance of the area, the lower the percentage of women. Such a phenomenon has been referred to as the 'law of growing disproportion' (Putnam, 1976): the higher and more attractive the position, the lower the representational share of disadvantaged groups (see also Reskin and Roos, 1990).

Within the Kaderdatenspeicher, the highest levels of women in the leadership group are found among heads of departments within internal trade (see Diagram 3:3), followed by those dealing with foreign trade (31%), while at the same level of hierarchy but in the more influential areas, such as within the central Ministries and Central State organisations, the proportion of women was less than 10% (exception for women on less-prestigious local state administrative councils –Räte der Bezirke - around 13%). The lowest percentages of women are found at the most senior levels, e.g., Minister or Director General, and in the most influential areas at Central Ministry and State Organisation level (around 2%). Most telling is that for the duration of the GDR, there was never a female member of the Politburo, and at the next most influential level, the Central Committee of the ruling Communist Party, women only reached an average of 10.6% (Schneider, 1994).

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attention to the existing regulations personally", Secretary of the SED, 1977, in Best and Hornbostel, 1998, p217 (author's translation).





Level 1: Ministers of State, General Directors of Industries, Heads of enterprises etc.

Level 2: State Secretaries, Divisional Directors etc.

Level 3: Directors of Specialist Areas, Leaders of Trades etc.

Level 4: Department Leaders etc.

Source: Best and Hornbostel, 1998, p217

Diagram 3:3: Female percent in leadership position by state organisational sector and hierarchy of position – GDR 1989

The category covering department officials (Funktionen, Dienststellungen, code 9200) is particularly important, partly because, of all the main occupational groups it contains the highest percentage of workers (14,5% of the entire workforce) of which 54% were women, but mainly because it can shed some light on the degree to which women in the GDR had broken through the “glass ceiling” at middle-management<sup>18</sup> or department leader level. Analysis at the lowest level of aggregation shows that the seemingly egalitarian representation of women seen at main category level is due to the very high percentage of women acting as department officials in two areas - administration (86%) and an area labelled as ‘auf dem Konfessionellem Gebiete’ – in the confessional area<sup>19</sup> (77%). This latter category is particularly noteworthy - whilst the main category ‘theologian’ was atypical for women, women nevertheless dominate this associated category. In the other areas the percentage of women as department leaders is

<sup>18</sup> Caution is needed with regard to the use of this title in the GDR. Those who had a supervisory role over more than three other workers were often referred to as managers. It is not certain what the exact criteria was for inclusion in the category with this title.



much smaller: politics and law (39%), education (38%), scientific collaborators (37%); general department officials (37%); and traffic and transport (29%).

When the main occupational groups that were typical for women in 1981 in the GDR are examined at the lower level of aggregation, unlike the pattern found in male-dominated areas, where males work in female-dominated areas, it is more likely to be in a higher status positions, such as Meister (master crafts-workers equivalent to production supervisors and general foremen), or as a specialist skilled worker, rather than as unskilled or semi-skilled labour. For example, in the leather industry, while most sub-main and minor occupational categories have high concentrations of female workers, 84% of Meister are male. A similar pattern is also found in one of the three most female dominated occupational areas of the GDR, 'Human Medicine and Pharmacy'. The majority of occupational groups at the lowest level of aggregation are heavily female dominated with percentages of women ranging from 88% (masseuse) to clinical nurses (99.8%): Nine groups, which include higher status occupations, such as doctors and dentists, are gender neutral. However, 6 groups are atypical with women having less than 15% of workers in 3 of the groups. The important point here is that of these 6 groups, 4 have the status of Meister and here women are heavily under-represented. In this female-dominated occupational area, 89% of lower skilled workers are women.

Teaching, as selected by Anker as representative of a traditionally female-dominated occupation, was a typical occupational area for women in the GDR. Nevertheless, analysis at the lower level of aggregation reveals a pattern linking the age and ability of the child to the gender of the teacher. According to the data, women were typically teachers of the lower classes in secondary schools (84%), pre-school and adolescent education assistants (98%), kindergarten teachers (99,6%) and

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<sup>19</sup> This has been explained as most likely comprising people who while not priests or members of

‘Krippenpaedagogen’, i.e., crèche teachers (99,8%). They were less likely to be teachers with university training, especially those teaching work theory, specialised subjects or in special schools (meaning schools for languages, music, and sport etc.) where they accounted for 40% of staff.

The second largest occupational group in the data set, Trade, Gastronome and Service, which accounted for 11.5% of the entire workforce, was also one of the top areas for women’s employment (88% at the highest level of aggregation). At the lowest level of aggregation, women can be seen to have been employed predominantly in general service (72%), as cooks (85%), specialised trade assistants, (91%) textile cleaners (93%), bespoke tailors (94%) hairdressers and beauticians (96%), restaurant and kitchen helpers (98%) – all of which conform to Anker’s list of traditionally female-dominated occupations. Conversely, it was atypical for a women to be a shoemaker (9%) a clockmaker Meister (9%) a shoe repairer or other general service Meister (20%) or to be a chimney sweep (23%). Nevertheless, in some categories women were better represented as Meister, for example, in hairdressing and beauty, the restaurant trade, and tailoring, women accounted for 51%, 58%, and 62% of Meister, respectively. However, this is put into perspective when it is noted that in areas such as hairdressing and tailoring, women accounted for well over 90% of workers, so that males were disproportionately represented in higher status positions in these female-dominated occupations.

### Lorenz curve and Gini coefficient

When the distribution and concentration of women in the GDR in 1981 is calculated using the Lorenz curve and Gini coefficient at both the highest and lowest levels of segregation, results suggest a greater disparity between the two levels than was suggested by the measure of typicality. At the highest level of aggregation (see Diagram

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religious orders, worked in areas affiliated to the church, or which lay between the church and state.



3:4) the Gini coefficient is 0.157 and 0.184 at the lowest (see Diagram 3:5). However, remembering that 0 represents a fully equalised distribution of both genders across the labour force (and 1 the maximum unequal distribution) then findings for the East in '81 suggest a fairly low level of concentration, albeit increasing at the lowest level of aggregation.

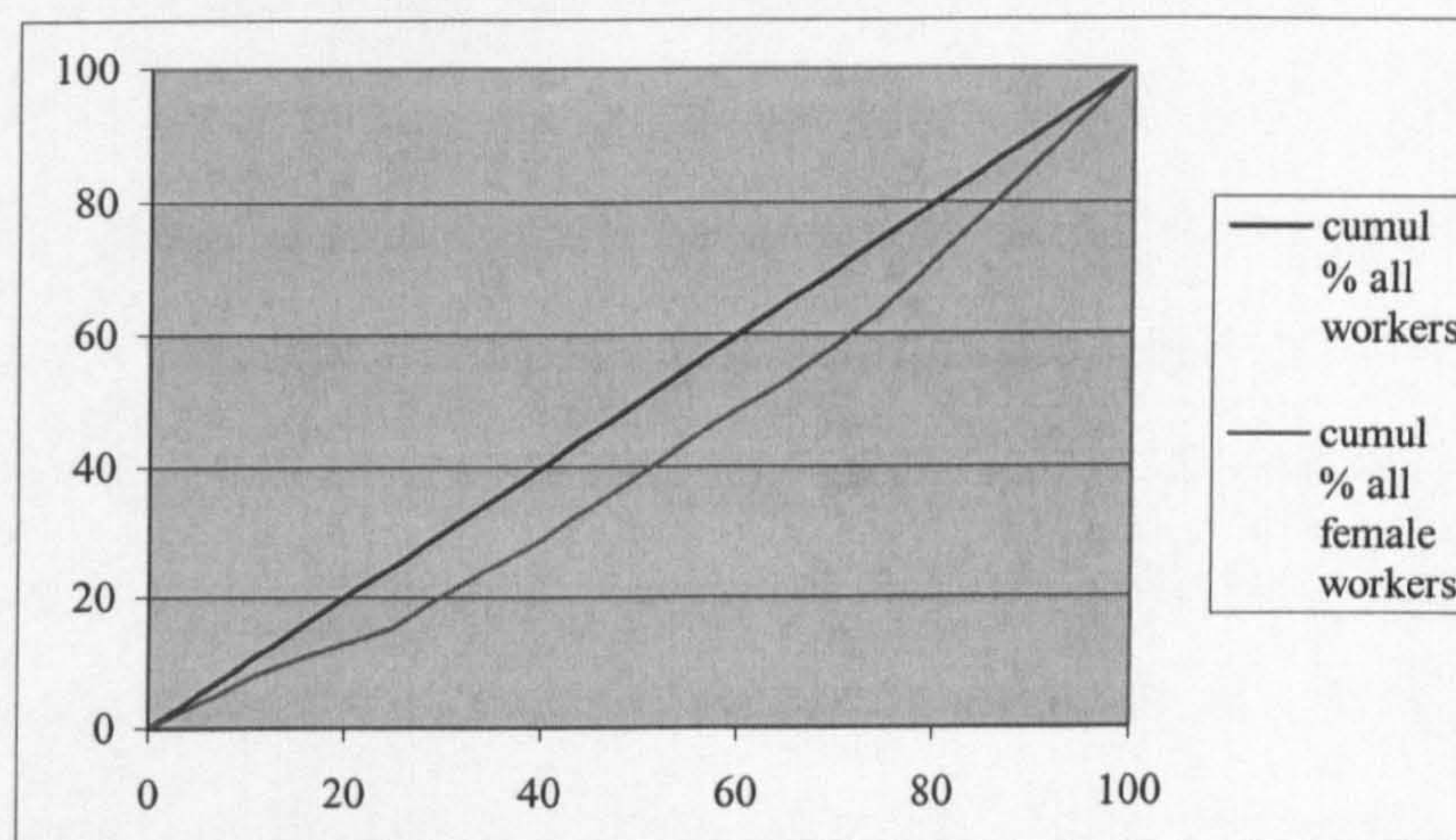


Diagram 3:4: East 1981: Lorenz curve: Distribution of female workers: highest level of aggregation: Gini coefficient: 0.157

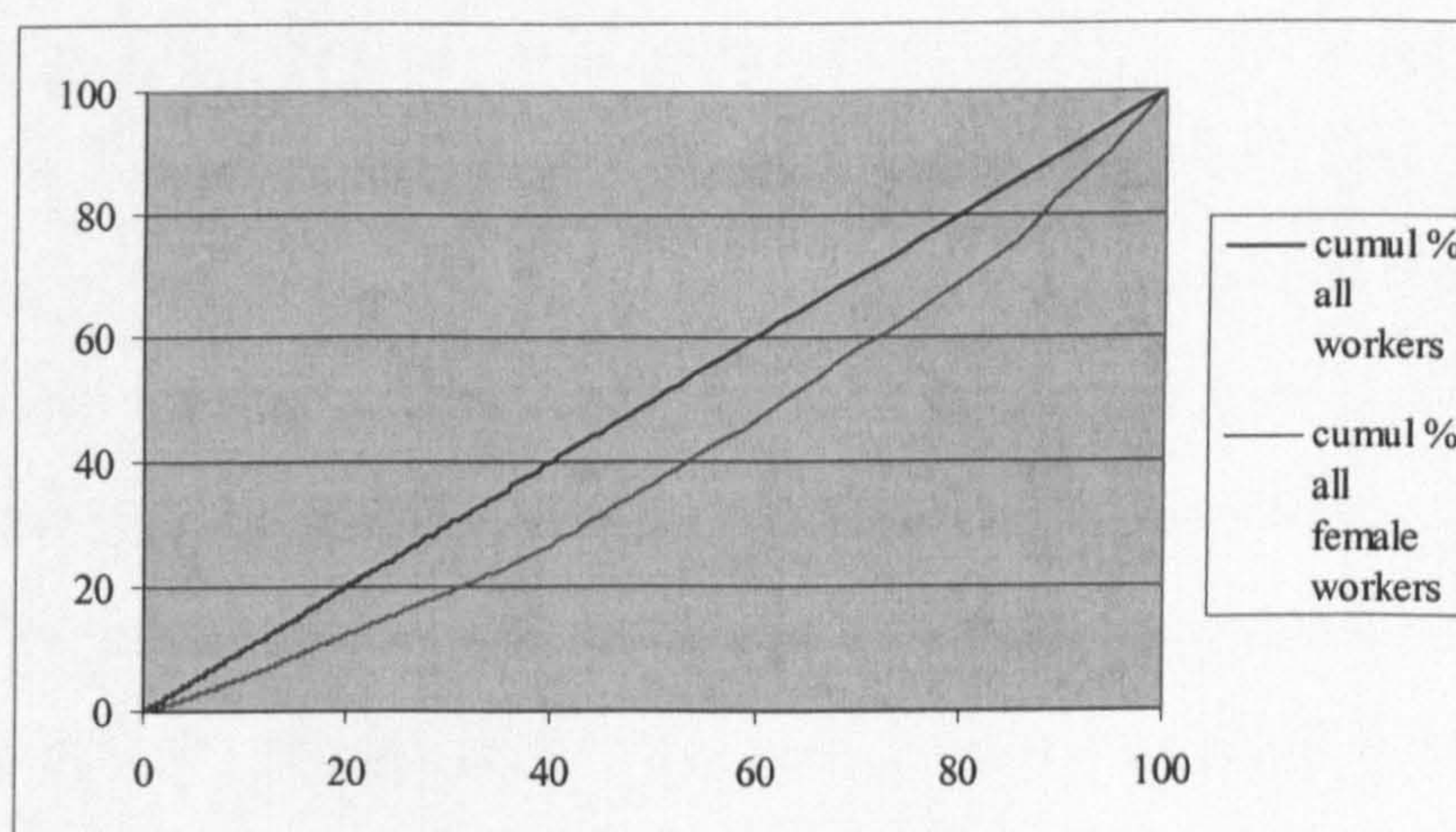


Diagram 3:5: East 1981: Lorenz curve: Distribution of female workers: lowest level of aggregation: Gini coefficient: 0.184



### Summary:

What emerges from these analyses is a mixed message. First and foremost, it would seem that, despite the almost equal involvement in the labour force of men and women, at the lowest level of aggregation, 60% of the labour force worked primarily with members of their own sex. For a large proportion of both men and women, therefore, this meant that their work-role followed traditional gender lines, with males concentrated into blue-collar occupations involving heavy manual labour, and with women's domestic role being carried over into the work environment so that they were concentrated into areas concerned with service, caring and nurturing. Further, it would seem that women played a strong supportive role in the labour market of the GDR, for where they are found in atypical areas, many were employed as unskilled labour, or were working in female-dominated enclaves of specialist tasks, rather than as skilled workers working alongside their male colleagues. Indeed, although 44% of all skilled workers were women, there was a 66% chance that an unskilled or semi-skilled worker was female, and over one third of all occupational categories labelled as unskilled or semi-skilled had concentrations of 70% women or higher.

At the same time, in those areas which were female-dominated, a disproportionate number of males held supervisory positions, such as Meister, or as department leader. In fact, there was only a 13% chance of a Meister being female, and of the 54 occupational categories concerning Meister, only 8 were typical or gender neutral for women. Expressed in another way, 5.9% of all male workers achieved the rank of Meister but only 0.9% of all female workers. Likewise, women were under-represented as leaders and in other positions of authority: Generally speaking, the higher the position, and the more politically influential the area, the less likely women were to be included.



On the other hand, women show a strong presence in positions that are traditionally considered male domains, particularly as engineers and technicians (Anker, 1998). As engineers women are found across all occupational categories in various degrees of concentration, but have some of their strongest presence in strongly male-dominated occupational areas, such as the construction industry, and even in mining. They also appear as mathematicians and physicists in percentages verging on parity with men. They are found as leaders, managers and department leaders, even though their occurrence at these levels doesn't match their concentrations in the related occupational areas, and would seem to follow Putnam's 'Law of Growing Disproportion' (1976) in that they fare better at the lower positions of responsibility than at higher leadership levels. There is also ample evidence in the data to support claims that women in the GDR were among the most qualified in Europe: There was a 74% chance that a worker with a Fachschule qualification would be female (calculation based on occupational categories in the data set with the suffix 50 or 60) and a 50% chance that a worker with a university qualification (analysing categories with the suffix 70) was female.

In sum, with regard to the structure of opportunity for women in GDR in 1981, a somewhat inconsistent picture emerges: First, women were supported ideologically and practically in their role as equal members of a work-based society, where they were expected to take full part while the state organised many of the traditional social functions of women, primarily in terms of child care. Particularly during the GDR's push towards the Technical Revolution in the 1970's, women were encouraged to attain qualifications, especially that of skilled worker, and operatives of the state machinery were instructed to see that the profile of women was raised and their promotion supported. However, although more women than might be expected in non-communist countries worked in areas usually considered to be within the male domain, most

women in the GDR could expect to work in gender-typical occupations and many as non-skilled workers.

To what extent women were able to choose where they worked cannot be understood from this data but with regard to what occupations were available, and in which of these women had greatest chance of working, the picture is quite clear. As to why women worked in such large concentrations in stereotypical occupations – it is unlikely to be linked to gender differences in qualifications - 44% of women in the GDR held the status of ‘skilled worker’, which means that an equally large percentage had attained their 10-Klasse Abschluss (equivalent to matriculation at GCSE level), a further 10% of all women (which accounted for 75% of all workers with this qualification) had the equivalent of the Abitur via the Fachschule, and a further 3% of all women held university level qualifications (i.e., 50% of all workers with same level qualifications). Thus, it is unlikely that women were concentrated into gender-typical areas because they were deficient in their qualification levels. One important point to note here, is that in the GDR, the possibility to take the Abitur (which controlled entrance to university, and hence to occupations requiring university-level qualifications) was highly politicised, favouring those with (or from families with) affiliation to the Party. The analyses seem to suggest that a particular type of socialist patriarchy was at work whereby socialist ideology meant that women could and should work outside of the home but where the controlling forces (which remained predominantly male) directed women into gender-stereotypical occupations. In other words, gender equality in the workforce was more about the opportunity to work rather than the type of work undertaken, and most women, especially those without the Abitur, could expect to work in traditional female-dominated occupations. That said, it is also clear that the structure of opportunity presented by the GDR did allow many women to engage in atypical female work.



## **West Germany : Structure of opportunity for women in the labour force of the FRG: 1981**

Data for the West in 1981 give the overall number of women actively employed as 11,062,000, which means that women accounted for 39%<sup>20</sup> of the labour force at that time (Zahlen zur wirtschaftlichen Entwicklung der BRD, 1993) and for 52% of working-age women. In order to determine precisely where and in what concentrations women in the West were working in 1981, data comparable to that used to answer the same question for women in the GDR had to be located. Comparable, that is, on two counts: First, data were required that gave a full count of workers rather than being rounded to the nearest thousand. Second, data were needed specifically for 1981. On both counts this was problematic: In the West most occupational data are collected through the Mikrozensus, but this is derived from a 1% population sample so that data given are rounded to the nearest thousand and are not reported below 5,000. In addition, the Mikrozensus is not conducted annually and 1981 was not a year of data collection. Thus, although occupational data were available for 1980 and 1982, the effect of the rounding and of not reporting cases of less than 5,000 rendered it useless for comparison with the GDR data for 1981.

Data for the FRG that satisfied this criteria were located in the form of Arbeitsmarkt in Zahlen (Labour Market Figures) from the Federal Institute of Labour in Nürnberg (Bundesanstalt für Arbeit). These give a full count of 'sozialversicherungspflichtige' employees i.e. all workers liable to pay social insurance, in 1981. However, this was also somewhat problematic as it excludes workers not liable to pay social insurance, namely: self-employed; family-dependant workers; some

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<sup>20</sup> Differences in the percentage given can occur due to the inclusion or exclusion of different categories, such as trainees, women on maternity leave and those looking for work. Other sources give the percentage of women in the labour force in 1981 as between 37% and 38.4%.

incidental categories of worker (those earning less than 520 DM<sup>21</sup> per month, and miners entitled to Knappschaftsversicherung -insurance provided by the Miners Guild) and Beamte (a category of civil servant holding public office<sup>22</sup>). The missing workers were estimated to account for between 17% and 20% of the total workforce. Nevertheless, although the exclusion of some categories of workers was less than ideal, because there seemed to be no alternative that could offer more suitable data, and as it was expected that reasonable estimates of the missing figures could be obtained from other sources, the data were deemed acceptable for analysis. Nevertheless, these deficiencies in the data have to be borne in mind and care taken not to over interpret results.

### **Data Organisation**

The data<sup>23</sup> cover the working population of the FRG in 1981 liable to pay social insurance (n = 20863972, of which 8109904 were female). The data, which are organised according to the West German Occupation Classification Scheme (Statistisches Bundesamt, 1975) are broken down by gender and work status i.e., unskilled or semi-skilled worker (Arbeiter), skilled worker (Facharbeiter), and white collar workers (Angestellte).

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<sup>21</sup> Workers who earned less than 520 DM per month through one job did not pay social insurance, but such workers often had other jobs so this category does not mean total exclusion from the data set.

<sup>22</sup> "These civil servants work for the most part in Ministries, higher federal agencies, the offices of the chief administrative officers in the regions, local government administration, public corporations and other agencies and authorities" (Beruf Aktuell 1992-1993 Edition, German Labour Office, p351). There are lower, intermediate, higher and senior grades of Beamte.

<sup>23</sup> Supplied in hard copy format by the Federal Institute of Labour in Nürnberg (Bundesanstalt für Arbeit) and transformed into machine readable form by the author.



At the highest level of aggregation there are six main occupational groups:

- |                                  |              |
|----------------------------------|--------------|
| 1. Plant, animal and fishery     | 4. Technical |
| 2. Mining and mineral extraction | 5. Service   |
| 3. Production                    | 6. Other     |

These main groups are divided into 33 sub-main groups (equivalent to ISCO 2-digit level) which are further divided into 86 minor categories (equivalent to ISCO 3-digit level), the lowest level of aggregation being the sub-minor categories (n=335, equivalent to ISCO 4-digit level). For the analyses, in order to provide results that are as closely as possible comparable to those of the GDR, sub-main categories are taken as the highest level of aggregation and the sub-minor categories as the lowest.

Similar to the GDR, the West's coding system groups some categories of workers separately from the occupational areas in which they are working. This particularly affects two groups: 1. Engineers, chemists, physicists and mathematicians and, 2. Technicians and specialised technical workers. Further, Meister are grouped with technicians and specialised technical workers, so that, apart from the breakdown into unskilled, skilled and Angestellte, no breakdown by skill status is available in the individual occupational areas in West data set. Further, whilst the GDR's military, police, and state security were anonymously coded, in the West they are easily identifiable. Finally, at least one sub-category is subjected to different classification in each region, in the GDR's classification system, a forecourt attendant (Tankwart) was classed within the main occupational category, Traffic and Transport, while in the West it is included within the main category, Services, under Sales Personnel. Finally, as for the GDR data, the 'miscellaneous' category (main occupational group 6) is removed for the analyses. These categories account for .4% of the total workforce, and for .3% of all female workers. With these groups removed, the dataset comprises 20774413 total workers, of which 8082703 are female.

## Gender segregation in the Labour Force of the FRG: 1981

### Highest level of aggregation

Results of analysis at the highest level of aggregation using the measure of typicality are shown in Table 3:7. As can be seen, at this level of aggregation, the majority of occupational categories are male-dominated, and account for a greater share of all workers than occupations which have a gender neutral distribution of males and females. What is particularly striking, however, is that the largest percentage of women is found in occupational groups that measure as gender neutral. At face value this would suggest a better than expected distribution of women throughout the occupational groups but what seems to be happening is that, because of the relatively low numbers of women in the workforce, many of the traditionally female-typical occupational areas considered to be typically female-dominated (Anker, 1998), such as sales, administration and office work, social work and education, do not pass the 70% benchmark and therefore are classed as gender neutral.

	% all women workers	% all male workers	% all workers	% of all occupational categories
<b>Atypical</b> ≤30% women	11	67	45	56
<b>Gender Neutral</b> 31% - 69% women	63	29	43	34
<b>Typical</b> ≥70% women	26	3	12	9

Table 3:7 FRG 1981: Highest level of aggregation: Workers and occupational categories by percent according to the measure of typicality

In order to see how much the unexpected distribution by measure of typicality may be influenced by the overall lower percentage of women in the West's labour force compared to the East in 1981 (52% and 86% respectively) the effect of artificially inflating the numbers of women in each occupational group in the West by the percentage difference of women of working age in the workforce East/West in 1981 (i.e. 34%) was investigated. The degree of typicality was then recalculated and analysed



again using the measure of typicality. The result of this hypothetical situation, which can be seen in Table 3:8, is that the categories expected to measure as female-typical according to Anker do now exceed the 70% mark. In addition, two previously atypical groups, chemical industry workers and assistants also now pass the 30% atypical cut-off point and can be reclassified as gender neutral. This simple adjustment is not offered as a statistically valid measure but it is interesting that the injection of the percentage difference between the two regions in terms of women in the labour market brings the classification of occupations by measure of typicality more in line with other OECD countries (Anker, 1998), and more in line with the findings in the East.

Returning to the actual occupational areas measuring as atypical for women, all those given by Anker as traditional male-dominated occupations (with the exception of legislative officials and managers, which are not specified at this level of aggregation) are present – including engineers and technicians, and security that were found to be gender neutral in the GDR.

The chemical industry is also atypical for women and, even though it becomes gender neutral in the analysis of the hypothetical data set, it doesn't reach the level of women workers seen in the GDR. One gender neutral occupational group is particularly noteworthy – assembly, installation and other metal work: More usually expected to be male-dominated, here, 52% of those working in this area are women.

As already discussed, only three occupational groups at this level of aggregation can be classed as typical for women, namely textiles and clothing, general service, and health – all of which are listed by Anker as traditionally female-dominated areas of employment.

Main Occupational Group	actual % female	hypothetical % female
<b>Atypical</b>		
construction	0,4	1
mining	1	2
machine operators	1	2
carpenters, model builders	2	3
fitters and mechanics	3	4
engineers, chemists, physicists, maths	3	3
building materials	5	6
electricians	6	8
painters, lacquerers	6	8
building outfitters	9	12
metal producers and processors	11	14
traffic and transport	14	18
technicians, specialist tech workers	15	20
security and control	17	22
wood industry	18	23
plant, animal, fish,	21	26
chemical industry	30	37
assistant workers	30	36
<b>Gender Neutral</b>		
paper and printing	31	38
glass, ceramics	35	42
art and culture	40	47
food industry	41	48
service clerks	44	51
testers, packers, dispatch	49	56
assembly, installations, other metal work	52	59
leather and fur	62	68
sales	64	70
organisation, administration, office	64	70
social and education	67	73
<b>Typical</b>		
textiles and clothing	78	83
general service	82	86
health	84	88

Table 3:8: Main occupational groups by measure of typicality and percent female:  
Artificially inflated percentage of working females compared to original data

### Lowest level of aggregation

Results of analysis at the lowest level of aggregation (minus the 6 sub-minor groups belonging to the main group 'other workers') are shown in Table 3:9. As can be seen, a significantly higher percentage of women are found to be working in concentrations of 70% or more females, although the percentage increase in occupational groups classed as typical is only marginal. This main change is in the



number of occupational groups classed as gender-neutral and in the percentage of female workers employed in them. Overall, at the lowest level of aggregation, 70% of the work force is employed in areas where the chance of working with a member of the opposite sex is 30% or less, indicating a high level of gender segregation, and higher than was found in the East.

	% all women workers	% all male workers	% all workers	% of occupational categories
<b>Atypical</b> ≤30% women	9	74	49	60
<b>Gender Neutral</b> 31% - 69% women	44	22	31	27
<b>Typical</b> ≥ 70% women	47	4	21	13

Table 3:9: FRG 1981: Lowest level of aggregation: Workers and occupational groups by percent according to the measure of typicality

Conforming to Anker's examples of traditional male-dominated occupations, the most atypical main occupational group for women in the data set is the construction industry with an overall percentage of women of just 0.4%. Analysis at the lowest level of aggregation shows that the highest concentration of women (10%) is within minor group 472 'other construction workers'. In this minor group the majority of women (88%) are given as working as 'Angestellte' i.e. white collar workers, or are unskilled workers (12%) and none as skilled worker. This pattern is typical of all 14 sub-minor categories in this occupational area – the majority of women are either white-collar workers or unskilled workers, primarily the latter (in 10 out of the 14 sub-minor groups, 50% or more women are employed as unskilled workers – in one group, 'general construction workers' they account for 93%). In fact, in only one group – 'blasters' – are women found at least equally distributed across the three skill categories. However, this seemingly high percentage is because there are only 9 women in the whole category, of whom 3 are skilled workers, 3 white-collar workers, and 3 unskilled.

In the metal industry - another occupational area singled out by Anker as traditionally male-dominated - a similar pattern is found: Of the 24 minor categories

that constitute this main occupational group, only 4 are not atypical for women (metal binders, riveters, wire workers and solderers) and within these groups, women are overwhelmingly employed as unskilled workers. Indeed, in all categories, with the exception of sub-minor category 231 (metal polishers - where 36% were classed as skilled) the percentage of women classed as unskilled never drops below 81%, and in 19 of the sub-minor groups, the concentration of women in unskilled jobs is 90% or over. Neither are these two industries isolated cases. Similar patterns are found in other atypical areas; in mining, 74% of the 846 female employees were white collar workers with only 12% classed as skilled workers, and 14% as unskilled. In the wood industry, women were also predominantly unskilled workers within basket and general wooden goods production.

It could be expected that a different pattern would be found within the main occupational groups which were typical for women. However, a breakdown of the textile industry at the lowest level of aggregation shows that here women were also working predominantly as unskilled labour. So much so that, whilst the overall percentage of women in the industry is 78%, 67% are employed as unskilled workers. To see whether this was a pattern only applying to females or whether it was a feature of the industry employing a high percentage of unskilled workers overall, the percentage of males employed as skilled or unskilled workers, or as *Angestellte*, was analysed. Results showed that, despite their overall lower percentage, 50% of male workers in this female-dominated industry were employed as either skilled workers or as *Angestellte* – 41% and 9% respectively - compared to 30% and 2% of women employed in the same capacity.

The main occupational category with the second highest concentration of female workers – General Services – shows the same pattern, but in the main occupational group, Health, which has the highest concentration of women in West



Germany in 1981, a different picture is found. Here, because of the nature of the occupation, almost all workers are employed as Angestellte (and only in the sub-minor category dealing with care assistants does the percentage of women employed as Angestellte drop below 90%). However, as can be seen from Table 3:10, two of the higher status, professional positions – doctors and veterinary surgeon – are atypical for females, and as the status of the occupation reduces, so the percentage of females increases.

<b>Health sub-minor categories</b>	<b>% female</b>
vets	20
doctors	28
dentists	41
alternative healers	53
masseuse physiotherapists	68
pharmacists	74
care assistants	79
nurses midwives	87
medical laboratory	93
dietary assistants	97
clinic assistants	99.5

Table 3:10: Main category Health at lowest level of aggregation by percent female

As discussed earlier, according to Anker's (1998) list of occupations most likely to be female-dominated in OECD countries, some of the main occupational groups in West Germany in 1981 are unusual in that they are gender-neutral rather than female-typical. When the three main occupational areas concerned, i.e., those of education and social work, administration and office work, and sales, are analysed at the lowest level of aggregation, this is partly explained as the pattern of gender-segregation becomes clearer. Within education and social work, when the categories covering teachers<sup>24</sup> (including kindergarten supervisors but excluding home worker teachers) are selected, then teaching does measure as typical for women, there being 73% women in total. However, as was also seen in the East, there is a relationship between the age of those

being taught, or the subject area being taught, and the employment of women: Women were more likely to be teaching younger or less able children, while men were more likely to be teaching at university level, or teaching sport.

<b>Organisation, administration and office</b>	<b>% female</b>
commercial advisor	9
MPs, ministers, elected civil servants	9
company leaders	15
data processors	15
leaders of associations	17
leaders, administrative decision makers	20
accountants	45
tax advisors	55
office juniors	66
bookkeepers	67
office skilled workers	67
cashiers	84
data input	97
stenographers secretaries	98

Table 3:11: Main category, Organisation, administration and office work at lowest level of aggregation by percent female

The main category – administration and office work – can traditionally be expected to be female-typical, but in the West in '81 it is found to be gender neutral. Analysis at the lower level of aggregation shows that it is the composition of the main occupational group that hides the female typicality of this group. As can be seen by Table 3:11, women were typically secretaries, data input clerks and cashiers but it was atypical for them to be commercial advisors, legislative officials, or leaders of company's, associations, or administrative units, or data processors. However, there is a more equal gender distribution within some occupations that could be considered to be traditionally male-dominated, namely tax advisors and accountants, and among areas that could be considered traditionally female-dominated, namely book keepers and general office workers – the latter at both skilled and 'junior' levels.

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<sup>24</sup> The category 'other teachers' includes driving school instructors, flying instructors, personal trainers, and vocational trainers etc.



One area where women in the West would seem to be particularly underrepresented, especially in comparison to findings for the East at this time, is as engineers, where they account for just 3%. When this is examined at the lower level of aggregation (Table 3:12) women's presence only breaks into double figures as ship's technical officers.

Occupational category	% female
machine engineer	1
electro engineer	1
mining metal engineer	1
other engineers	1
other process engineers	3
surveying engineer	4
architect building engineer	5
agricultural engineer	6
chemist, chemical engineer	7
tech ships officers	18

Table 3:12 West 81: Sub-categories of engineers by percent female

As technicians, women fare slightly better, accounting for 15% of all sub-minor categories labelled as technicians. However, as has been in seen in the detailed breakdown of other main categories, when these sub categories are examined a significant degree of gender segregation along traditional gender-typical lines can also be seen (Table 3:13).

Occupational category	% female
machine construction tech	2
mining metal tech	2
electro technician	3
construction technician	4
other technicians	9
surveying tech	13
physics, math specialist technicians	15
other prod technicians	18
chemical physic tech	33
chemical laboratory work	37
dental technician	41
bio tech specialists	45
photo laboratory work	78

Table 3:13: West 81: Sub-categories of technicians by percent female



### Lorenz curve and Gini coefficient

The trend shown in the analyses of the data set using the measure of typicality, whereby there is a higher degree of gender segregation at the lower levels of aggregation, is also seen using the Lorenz Curve and Gini coefficient, but only marginally so. Remembering that for an equal distribution there would be no gap between the diagonal and the Lorenz curve, and the Gini coefficient would be zero, the results show a significantly higher level of inequality in the distribution of men and women across the labour force in the West in 1981 than was found in the East at the same time: This also supports the findings of the measure of typicality.

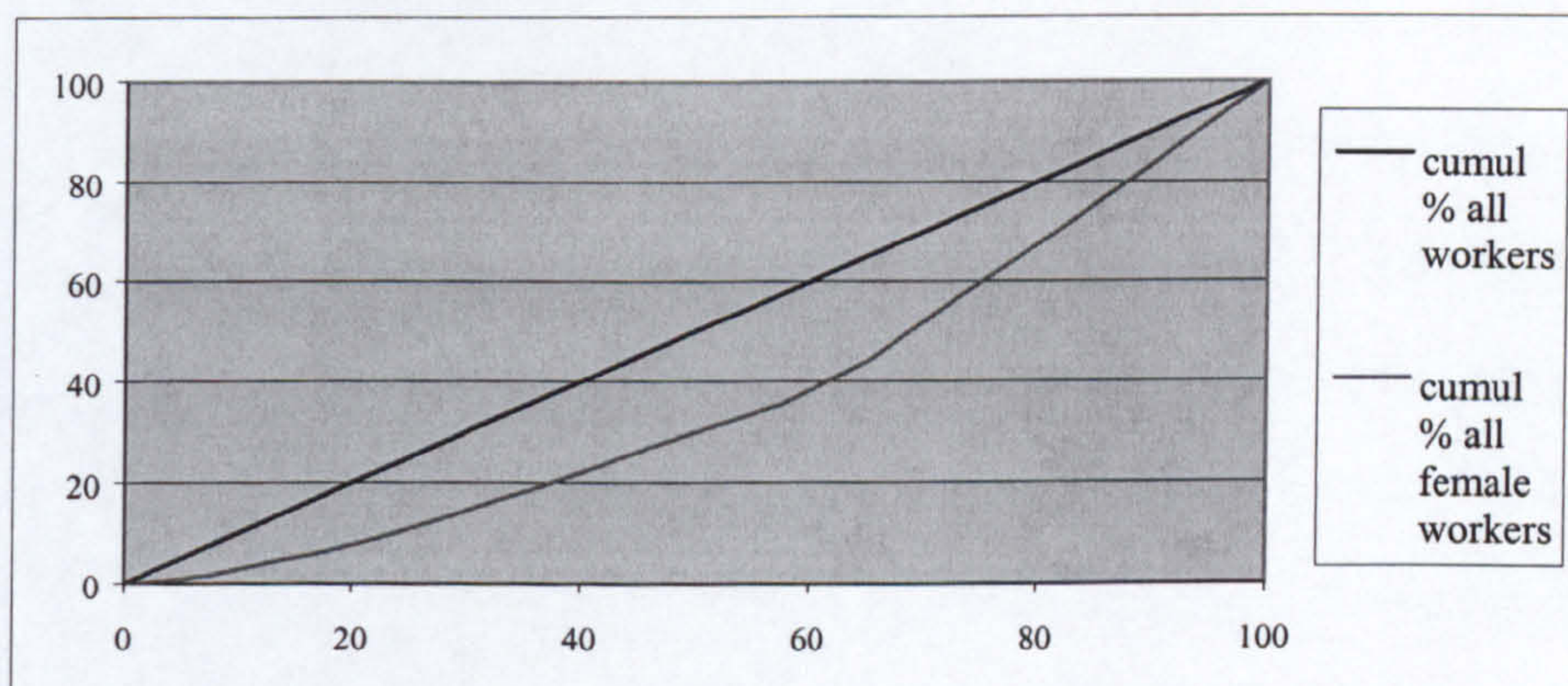


Diagram 3:6: West 81: Lorenz curve: Distribution of female workers: Highest level of aggregation: Gini coefficient: 0,267

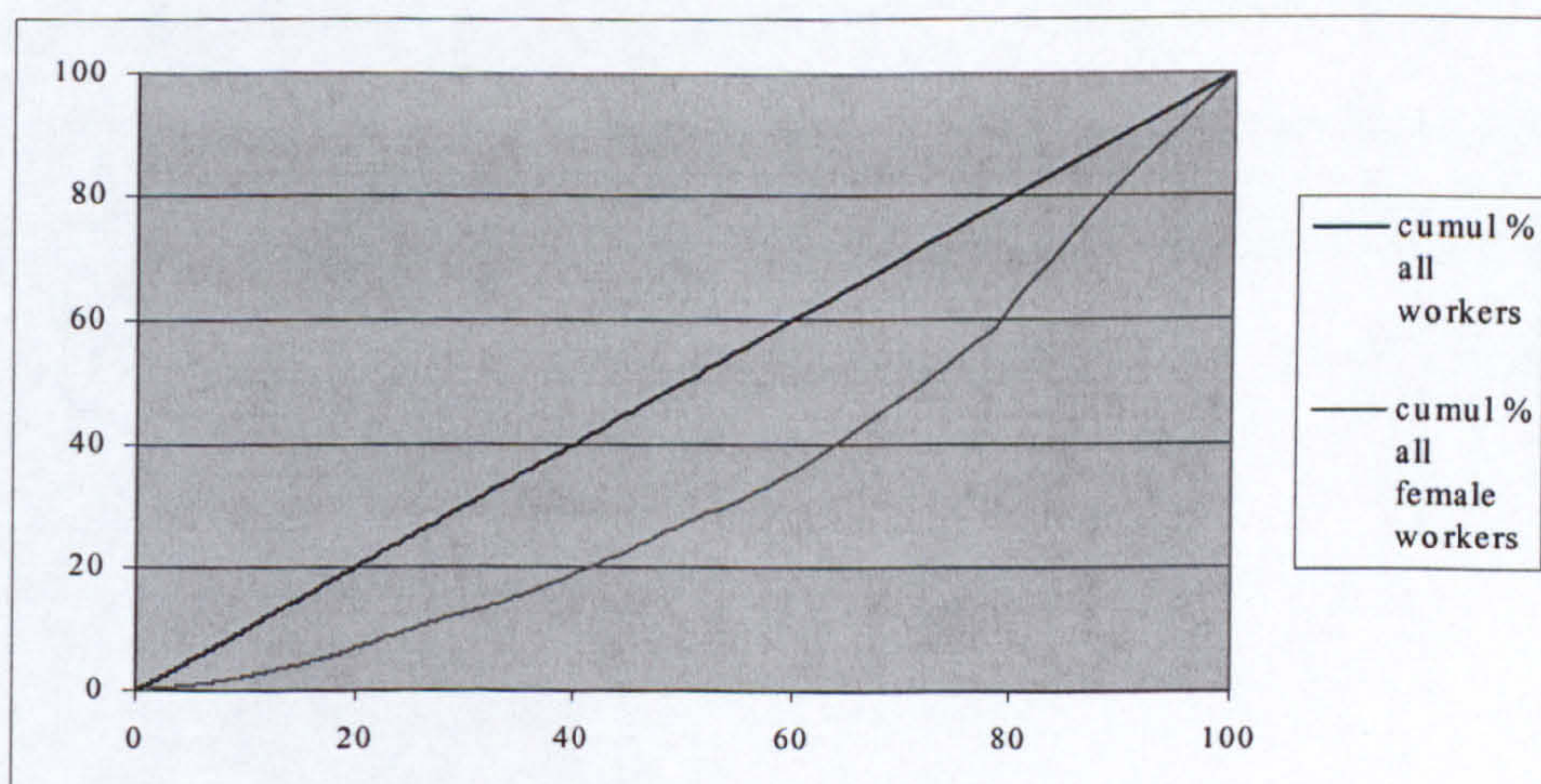


Diagram 3:7: West 81: Lorenz curve: Distribution of female workers: Lowest level of aggregation: Gini coefficient: 0,310



## Summary

In the West in 1981 a high percentage of women of working age were not in paid employment, and other data indicates that this was most likely to be married women, especially married women with children (Fobe, 1997). This conformed to the social climate which held women's paid work to be of secondary importance to that of men, and that when a woman had children, her main role should be that of mother and carer. When the data for the West in 1981 are analysed, all measures report the same situation: Namely, that the labour force of West Germany in 1981 was heavily gender segregated and that this is more evident at the lower level of aggregation. Further analyses also showed that women were more likely to be working as white-collar workers or unskilled labour, than in work designated as skilled. Women were heavily under-represented in professions such as engineers, doctors, vets, physicists, mathematicians, university lecturers and technicians, and were not well represented in prominent positions such as political representatives, Ministers, leaders of associations or enterprises. In addition, they were over-represented in traditional female-dominated areas of health care, service, and textiles and clothing manufacture.

In general, the gender-typical role model that had been strongly adhered to in the West, whereby the female role in society was predominantly expressed by the '3-K's' (Kinder, Kirche, Küche) was reflected in women's position in the labour force in 1981. The structure of opportunity for women at this time was one of restricted access, as indicated by the fact that, for the women in the dataset, 60% of all sub-minor occupational areas were atypical for women.

### East Germany: Structure of opportunity for women in the New Länder<sup>25</sup>: 1997

In 1997, based on data from the Mikrozensus (Statistisches Bundesamt, 1997) the female population of working age can be estimated as 4,224,000. Of these, 70%<sup>26</sup> were in employment (20% of whom were in part time work) which accounted for 45% of the total workforce. Although this is still a comparatively high figure, it represents a considerable reduction from the figures seen in 1981 in both the number of women working and their share of the workforce. That restructuring of the labour market in the East following reunification was primarily the cause is indicated in Table 3:14.

	females employed in 1000s	females % of workforce	change in % of total workforce size after reunification (1989 = 100%)	change in % female in workforce	change in % male in workforce
1989*	4,178	48,9	0	0	0
1991**	3,605	46	-9	-14	-5
1997**	2,957	45	-23	-29	-16.5

Source: \*Statistisches Jahrbuch der DDR, (Statistical Year Book of the GDR) 1990  
 \*\*Statistisches Bundesamt, 'Zeitvergleiche', (Federal Statistics Office) 1997

Table 3:14: Changes in the size of the East German labour market after reunification

Following reunification the West's system of occupational classification<sup>27</sup> was extended to the East so that the description given for the West in 1981 is now also relevant here. In addition, the same type of data used to construct the West 81 data set were used to establish the East 97 data set (i.e., national aggregate data<sup>28</sup>, given in full and not

<sup>25</sup> This term, which means 'The New Federal States' has been generally adopted to cover the territory of the former GDR after German reunification. The GDR had abolished the old Länder or States of Saxony and Thüringen etc., introducing smaller administrative areas known as Bezirke. After reunification the former States were reinstated.

<sup>26</sup> Other calculations can give a lower percentage of women of working age in the East being in employment in 1997. If Mikrozensus data for those registered as self-employed, family workers and Beamte in the East in 1997 is added to data from the East 97 data set i.e., those paying national insurance, the percentage drops to 64%. However, the higher percentage is supported by other data from the Statistisches Bundesamt – see Table 3:14.

<sup>27</sup> Between 1981 and 1997, some minor differences were introduced in the German Occupational Classification Scheme. In the 1981 data, the sub-minor category 891 – spiritual helper (Seelsorger) is included in the classification system but no data were provided. In 1997, data are provided. Also, category 470 – general building work – appears in the classification system of 1981 but not in 1997. Conversely, category 924 – household help – was not included in the 1981 classification but does appear in 1997.

<sup>28</sup> As for 1981, data were supplied by the Federal Institute of Labour in Nürnberg (Bundesanstalt für Arbeit) in the form of hard copy (Arbeitsmarkt in Zahlen - Labour Market in Figures) and was transformed into machine-readable form by the author.



rounded, for workers liable to pay social insurance [Sozialversicherungspflichtig] thus excluding the self-employed and Beamte) so that the caveats given for the West 81 data apply here. A further caution is also necessary: when comparing the labour force distribution of women in the East prior to reunification to their distribution post-unification, it is important to remember that two different occupational classification systems are involved and care has to be taken not to over-interpret results. Nevertheless, the use of the West's classification for the East in '97 does enable a more precise comparison with the West.

In 1997, the East dataset comprises 5,183,497 workers, of which 2,429,458 are female. As for the West 1981, category 6 ('other workers') is removed for the analyses leaving 32 occupational groups at this level of aggregation. This category accounts for 1.5%<sup>29</sup> of the total workforce in the data set, and for 1% of all females: the total number of workers used in the analyses, therefore, is 5,107,515, of which 2,400,539 are female.

### **Gender segregation in the Labour Force of East Germany: 1997**

#### Highest level of aggregation

Results of analysis using the measure of typicality can be seen in Table 3:15. These indicate a high level of gender segregation with only 17% of workers employed in occupations that have a gender neutral sex ratio. Put another way, 83% of workers work in areas where the concentration of their own sex is 70% or higher.

In terms of the occupations that measure as atypical for women in the East (see Table 3:16), with the exception of occupational groups that no longer appear as separate categories – i.e. energy, theology, and water, all of the categories found to be atypical in 1981<sup>30</sup> are still atypical in 1997. However, there are some additions: the category

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<sup>29</sup> It should be noted that category 6 accounts for a much larger percentage of the workforce in the East than in the West at this time primarily due to the large number of people found in sub-category 'unfinished training'. This alone accounts for 1% of the data set and 40% of this sub-category are female.

<sup>30</sup> In the GDR in 1981, 'painters' and 'carpenters' were subsumed under the general category of 'construction industry'.

‘security and control’, which was hidden in the GDR data in 1981, but which was estimated to be gender neutral, is now atypical (thus conforming to Anker’s list of representative traditional male-dominated occupations). Likewise, the constructed category ‘engineers’ was gender neutral in 1981 but is atypical in 1997 with women accounting for just 20% of the general category ‘engineers’, which also includes chemists, physicists, and mathematicians (note also that these latter categories were also gender neutral in 1981).

	% all women workers	% all male workers	% all workers	% of all occupational categories
<b>Atypical</b> ≤30% women	8	63	37	44
<b>Gender Neutral</b> 31% - 69% women	18	17	17	37
<b>Typical</b> ≥70% women	74	20	46	19

Table 3:15 East 97: Highest level of aggregation: Workers and occupational categories by percent

In addition, although several occupational categories were atypical in 1981, and remain so in 1997, the overall percentage of women working in these areas in 1997 has decreased considerably, particularly in the metal industry (from 14/21% - two separate categories in 1981 – to 8% in 1997), the electrical industry (from 17% to 6%), building materials production (from 29% to 5%), and traffic and transport (from 22% to 18%)<sup>31</sup>. One anomaly, however, is the wood industry: In 1981 women accounted for 17% of workers in this area but in 1997 this has risen to 26%. The answer would seem to lie in the drastic reduction in the industry<sup>32</sup>, whereby areas with a higher percentage of women than men have survived.

Many of the main occupational groups seen to be gender neutral in 1981 are still gender neutral in 1997 (food-, glass-, paper-, and chemical industries; agriculture and

<sup>31</sup> In 1997, 6% of the category ‘fitters and mechanics’ are female workers. In 1981 there was no single category covering mechanics but it can be calculated that approximately 15% of mechanics at that time were women.



fisheries; culture and art) and all of the occupational groups found to be female-typical in 1997 (sales, administration and office work, social care and education, general service, textiles, and health) were also typical in 1981, although they now account for a greater percentage of the women. Nevertheless, the concentration of women in each female-typical occupational area has declined very slightly, except for one area where the drop in percentage of women is more marked i.e., in administration and office work, where the share of women has dropped from 88% in 1981 to 74% in 1997. The reasons for this are not clear from the data but one possibility is of particular significance for this work: Other studies (Heinz, 1996; Christmas-Best and Schmitt-Rodermund, 2001) have found that, due to the decline in some traditional male-dominated areas, such as the metal industry, young males in Germany have been increasing their presence in gender neutral occupations, such as service clerks, and making inroads into traditional female-dominated areas, such as administration and office-related work. This interest may also be related to technological developments within the office environment<sup>33</sup>. Further, it could also be related to high male unemployment that has been known to lead men to seek work in traditional female-dominated areas, as was seen during the American Depression (Reskin & Roos, 1990).

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<sup>32</sup> From 90,000 in 1981 to just over 10,000 in 1997.

<sup>33</sup> In 1991, as part of a school-based TVEI evaluation of new courses (Christmas, 1991), it was found that males and females enrolled in a new Business Studies GCSE course had quite different motives and values underpinning their choice: the girls tended to value the office-related skill content, such as typing; whilst the boys placed greater emphasis on IT related skills, such as using spreadsheet software packages.

Occupational Group Atypical	% female in occupational group	Occupational Group Gender Neutral	% female in occupational group
construction industry	4	chemical industry	31
building material production	5	technicians, meisters	35
fitters and mechanics	6	ceramics and glass	37
electricians	6	installations and assembly	39
building outfitter	6	agriculture and fishery	42
carpenters	6	other labourers	42
machinists	6	paper industry	44
mining	7	testers, packers and dispatch	52
painters and lacquerers	7	leather and fur	53
metal industry	8	literary and culture related	56
traffic and transport	18	food stuffs	61
security and control	18	service personnel and other related	66
engineers (chem, phys, math)	20		
wood industry	26		
<b>Typical</b>			
sales	73		
administration and office	74		
social care and education	77		
general service	81		
textiles and clothing	83		
health	88		

Table 3:16: East 97: Highest level of aggregation: Main occupational groups by Measure of Typicality and % female workers

#### Lowest level of aggregation

The result of analyses using the measure of typicality at the lowest level of aggregation can be seen in Table 3:17.

	% all women workers	% all male workers	% all workers	% of occupational categories
<b>Atypical</b> ≤30% women	8	70	41	46
<b>Gender Neutral</b> 31% - 69% women	18	18	19	33
<b>Typical</b> ≥70% women	75	12	40	20

Table 3: 17: East 97: Lowest level of aggregation: Workers and occupational categories by percent

What is immediately noticeable is that, although there is a decrease in the percentage of gender neutral occupational categories, it is minimal, and overall, the expected increase



in gender segregation at this lower level of aggregation is not found: One possible explanation for this is the exceptionally high percentage of women in female-typical occupational areas at main category level (74%), probably linked to labour market restructuring following reunification. In 1981, even though had they only accounted for a small percentage of all workers, many women had been working in atypical female occupational areas, such as mining, but by 1997 this had changed significantly. For example, in 1981 mining employed 2,870 women, but only 295 in 1997. Similarly, the construction industry had employed just over 27,000 women in 1981, but less than 18,000 in 1997. Further, in 1981, some of its sub-minor categories, such as architectural drawers (96% female) had high concentrations of women, whereas in 1997 the highest percentage of women in any one category is 27% (and in most of the sub-minor categories, women account for 4% of workers or less). It could be, therefore, that differences in the classification of sub-minor occupational categories between 1981 and 1997, differences in overall number of women in female-atypical occupations, and differences in their concentrations in these sub-minor groups, have resulted in the exaggerated skew seen in the distribution of women across the classification system in 1997. However, it also has to be remembered that, in line with Fourestié's theory of economic sector development, the occupations found to be female-typical are also areas of economic growth. In fact, when the East's main occupational groups are ordered by share of the workforce active within them in 1997, then 5 of the 8 largest occupational groups are female-typical, including the overall largest group – organisation, administration and office work.

Returning to the male-dominated occupations offered by Anker as representative of those found in most OECD countries, in contrast to the situation in 1981, at the lowest level of aggregation, all areas within the construction industry, including building material production, are atypical for women. Of those within the metal

industry, only 3 out of the 24 categories at the lowest level of aggregation are not atypical. In fact, where women are found in concentrations over 30%, a similar pattern to that seen in both the East and West in 1981 is found, namely, that where women are working in higher concentrations in these atypical areas, they are often engaged in unskilled work, or skilled work that forms a gender-typical enclave within the atypical area. For example, within the metal industry, 67% of solderers were women; within the category of fitters/mechanics women were primarily working as precision instrument makers or clock makers, and within fine-metal work, as optical and dental technical workers (75% and 77%, respectively).

As engineers women account for 20% in 1997 – and thus now conform to Anker's classification as a traditional male-dominated area. As can be seen from Table 3:18, of the 9 sub categories covering occupations labelled as engineer, only 2 break through the atypical barrier into gender neutral. In addition, in the largest single group of engineers (ignoring the general 'other engineers' category) - that of architecture and building– only 27% are female, despite this being a growth area in the East due to the ongoing construction and reconstruction work across the area, and despite the obvious wealth of female engineers qualified in this area. Nevertheless, although women are under-represented in all but 2 of the groups of engineers, they have maintained a presence in those areas, such as mining<sup>34</sup>, that were severely reduced after reunification.

occupational area	% females
electro engineer	9,00
machine engineer	11,00
mining/metal engineer	14,00
other engineers	18,00
other process engineers	21,00
architect/building engineer	27,00
surveying engineer	27,00
agricultural engineer	33,00
chemical engineer	38,00

Table 3:18: Breakdown of 'engineers' by sub categories and % female

<sup>34</sup> In 1981 there were approximately 29,000 general workers – i.e., excluding engineers and Meister – in the mining industry. In 1997 this was reduced to just less than 4,000.



The other area used by Anker to represent traditional male-dominated occupations, and one in which women in the East had flourished during the time of the GDR, is that of technicians: In 1997, however, as can be seen in Table 3:19, a much broader spread across the range of typicality is found. All areas measuring as atypical or typical are within traditional male- or female-dominated occupational areas, respectively, but those measuring as gender neutral do contain some areas which can be considered traditionally atypical for women. For example, within the area of maths and physics, 34% of the technicians are female, as are 49% of all chemical and physics-trained technicians, and 39% of ships' technical officers (responsible on board ship for the engines and auxiliary machines, and usually responsible for service and repair).

<b>Occupational Area</b>	<b>% female</b>
Mining	6
Electro-tech	10
Construction	11
Machine construction	12
Production	22
Surveying	30
Other technicians including environment and health	31
Physics and maths	34
Shipping	39
Chemical, physics-trained technicians	49
Photo laboratory	54
Bio-technicians	70
Dental technicians	77
Chemical laboratory	88

Table 3:19: Breakdown of 'technicians' by sub categories and %female

With regard to status, the position of Meister (which can be equated to production supervisor and general foremen) was a benchmark in terms of achievement and qualification for blue collar workers, and in the East in 1997, 82% of all industrial Meister were male. In terms of other gender differences in skill levels and status, 73% of all women workers in the East 97 data set are classed as 'Angestellte' (white collar workers), and form 68% of all Angestellte in the labour force at this time. Of the part of the labour force classed as 'Arbeiter' (blue collar workers - approximately 50%), 25%

are female. Of these, 58% are classed as unskilled and 42% as skilled. Altogether, women account for 39% of all unskilled workers and 17% of all skilled workers.

The occupations concerning legislative officials and government administrators lie within the main occupational category, 'organisation, administration, and office work' (female-typical). As can be seen from Table 3.20, women are underrepresented as company leaders but over-represented in all traditional office occupations, but also as accountants and tax advisors. They are also well represented as administration and association leaders, and in political administration and at ministerial level – unlike the results for women in the West in 1981, and possibly even bettering women's representation at these levels during the GDR.

Occupational category	% female
company leaders	28
commercial advisor	40
Data processors	41
association leaders	44
ministers political Beamte	50
admin leaders	50
accountants	70
tax advisors	75
office juniors	75
office skilled workers	81
bookkeepers	92
data typist	92
cashiers	96
stenographers secretary	97

Table 3:20: Breakdown of main category Organisation, administration and office work by sub-main categories and percent female

Other female-typical areas show the pattern reported earlier: For example, in the textile industry –although women make up 56% of the category decorative textile work, only 42% are classed as skilled workers whilst 81% of male workers in this area have this classification. Likewise, 99% of linen cutters are women but of these only 55% are classed as skilled workers whilst 68% of the small number of men in this area are classed as skilled. This phenomenon is even more marked in the occupational group 'general services' (81% female at highest level of aggregation). This group includes



some of the most highly concentrated female occupations, such as hairdressing, body care, hospitality and domestic management services, but nevertheless women in these areas are more likely to be in unskilled work and less likely, therefore, to be in a supervisory role, than the minority of males. For example, 97% of hairdressers are female but more males are employed as skilled workers (61% - compared to 52% female) or as 'Angestellte' (white collar workers; 6% - compared to 3% female). This is repeated in the sub-minor categories covering laundry work, room cleaners – in fact, in 6 of the 16 sub-minor groups within general services, where women are working in concentrations of 70% or over, more males than females are classed as skilled workers. And in all but 3 of the 16 sub-minor groups, more males than females have the status of Angestellte. As a final example, in housekeeping administration, which has 89% women overall, 63% of men are Angestellte and 21% are skilled workers, compared to 48% and 16% (respectively) of women. However, in the main category, Health, women are found to be well represented across all the sub categories, including 2 of the more prestigious professional occupations that were atypical for women in the West in 1981 i.e. doctors and vets (see Table 3:21).

Occupational category	% female
doctors	48
vets	50
care assistants	63
dentists	68
healers	81
masseuse physiotherapy	89
pharmacists	94
nurses midwives	95
medical laboratory	97
dietary assistants	98
clinic assistants	99

Table 3:21: Breakdown of main category Health by sub-categories and percent female

### Lorenz curve and Gini coefficient

Following the former pattern of investigation, and in order to see if the findings using the measure of typicality are supported when using different measures of concentration and distribution, Lorenz curves were drawn for the concentration of women across the

labour force of East Germany in 1997 at both the highest and at the lowest levels of aggregation (see Diagrams 3:8 and 3:9). As can be seen, unlike the findings for both the East and West in 1981, and contrary to the general theory that segregation worsens with the lowering of the level of aggregation, here there appears to be a more even distribution of women at the lower level of aggregation. The reason for this may lie in the dramatic restructuring of the East's labour market after reunification whereby the traditional male-dominated heavy industries were particularly drastically pruned, and the percentage of women in what remained of these occupational areas was especially reduced. At main occupational category level, i.e., at the highest level of aggregation, this resulted in 74% of all women workers being concentrated into just 5 of the 32 categories. Thus, just 26% of all women workers were distributed across the remaining majority of occupational categories, which can be seen quite clearly in the sharp bend in the Lorenz curve for this level of aggregation (Diagram 3:8). When the same data are subjected to analysis at the lower level of aggregation, the smaller groupings have a smoothing effect so that the overall distribution of female workers is more even, especially at this lower level of aggregation. However, both Gini coefficients indicate a greater degree of concentration and less equal distribution of women across the labour force than in 1981<sup>35</sup>.

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<sup>35</sup> An effect of the changing classification systems from that of the GDR to that of the West may also contribute to this difference, however.



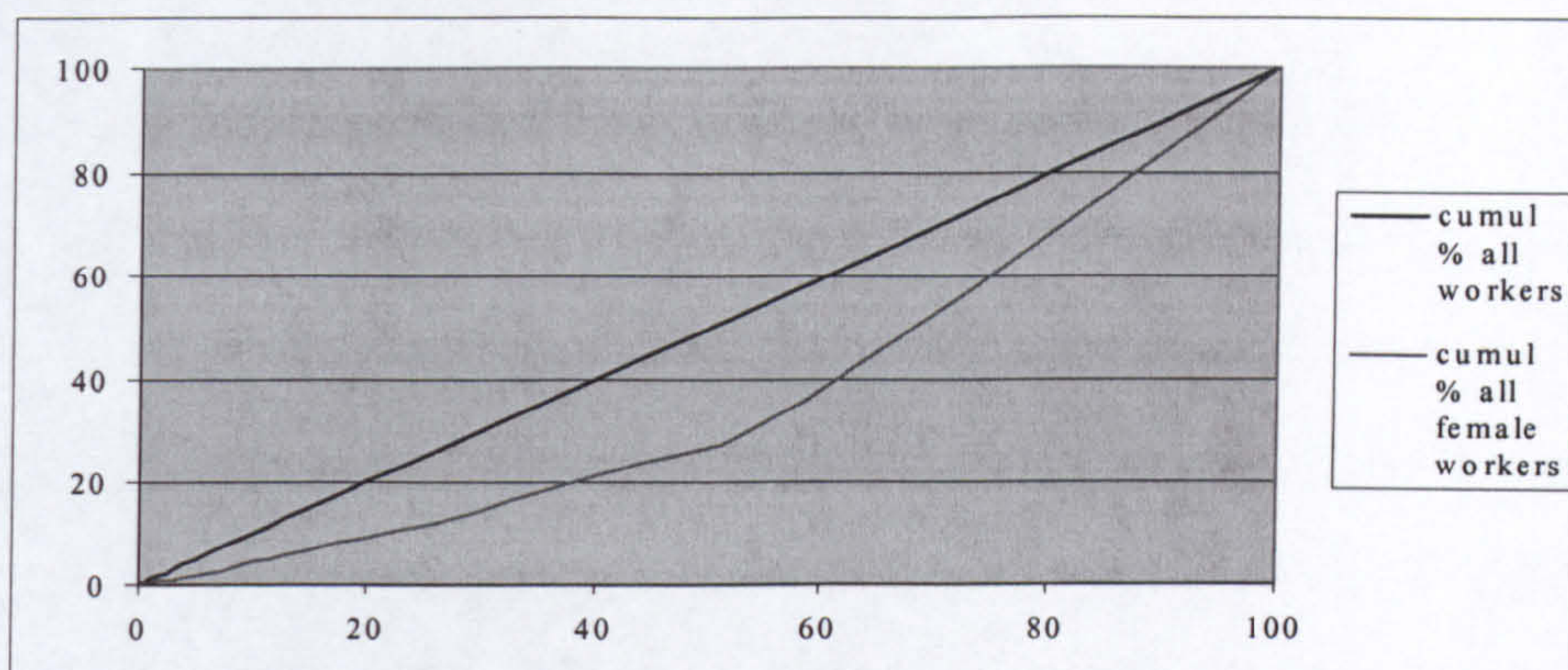


Diagram 3:8: East 97: Lorenz curve: Distribution of female workers: Highest level of aggregation: Gini coefficient: 0,263

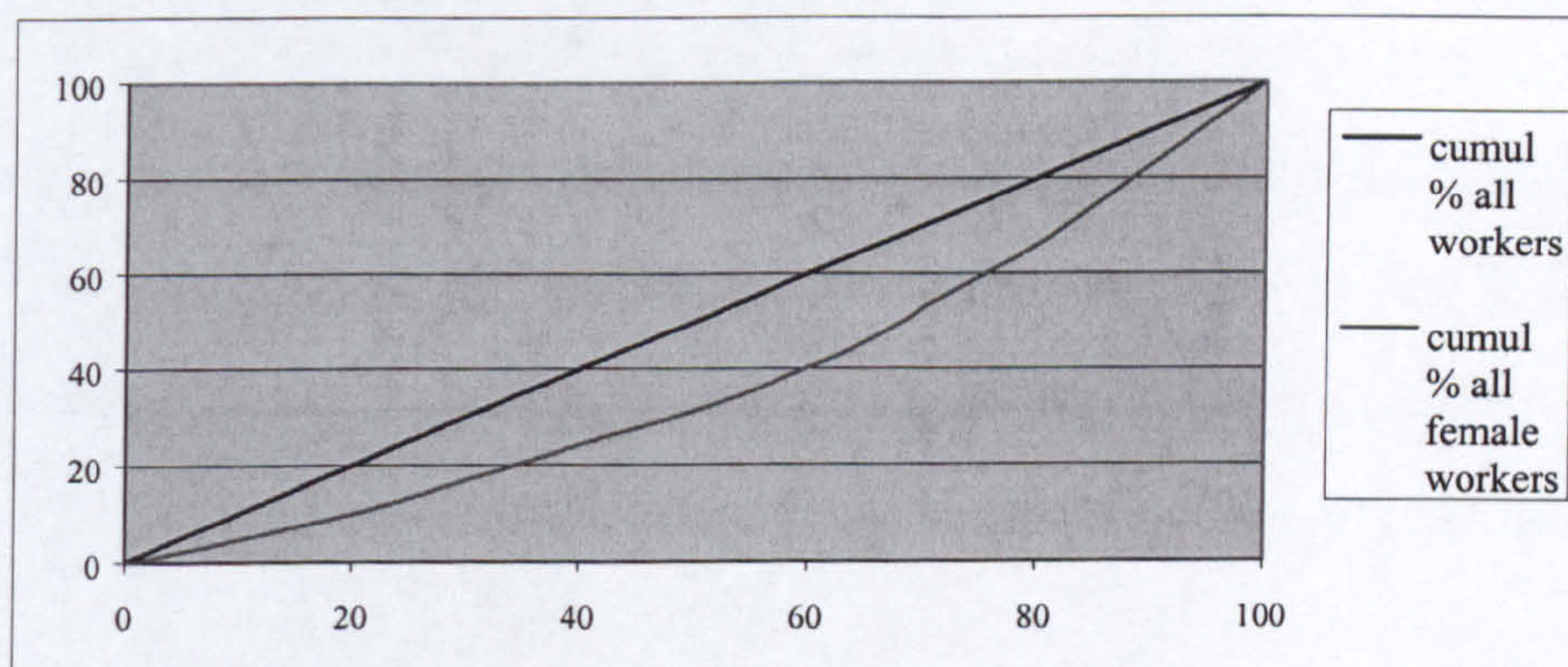


Diagram 3:9: East 97: Lorenz curve: Distribution of female workers: Lowest level of aggregation: Gini coefficient: 0,249



## Summary

In 1997, the structure of opportunity for women in the labour force of the East is very different from that of 1981. The reunification of Germany in 1990 after the collapse of the GDR had a profound impact on all aspects of life in the Eastern Länder but particularly on the lives of women. In 1997 there are fewer women of working age in employment, and they account for a smaller overall percentage of the labour force. There is a very high degree of gender segregation, with almost three-quarters of all women workers concentrated into just 5 traditional female-dominated areas. Although women are still to be found in the traditional male-dominated occupational areas, their presence is greatly reduced. Overall, women in the East in 1997 were most likely to be salaried white-collar workers, and where they were employed as blue collar workers they were more likely to be classed as unskilled. They were extremely unlikely to reach the level of Meister or to be the leader of a company, but they had an almost equal chance of holding a leadership position within an organisation or association, and an equal chance to hold such a position within administration. This latter is a moot point, however: Women made up the vast majority of workers within administration so that for 50% of leadership positions to be held by males cannot be seen as females having had an equal chance of attaining such status. That said, women are still to be found as engineers, although primarily in gender-typical occupational areas and at lower concentrations than in 1981. They are also still well represented as technicians, but again much less so than in 1981.

Whilst any comparison with the GDR in 1981 has to be made with caution, due to changes in the occupational classification system between 1981 and 1997, the results for 1997 nevertheless suggest an increase in the concentration of women into female-typical occupational groups, and therefore, a worsening of women's access to traditional male-dominated occupations. Further, they indicate a reduction in the number of groups



classed as gender neutral, and in the percentage of women workers they accommodate. The increase in the percentage of males now found in female-dominated areas is also noteworthy. The reduction in the percentage of women in atypical occupational groups in 1997 in the East, as suggested by the analyses, may also be linked to the overall decline of the traditional male-dominated occupations in East Germany. Drawing on the theory of gender stereotyped employer preferences proposed by Reskin and Roos (1990), it would not be too far-fetched to presume that an increase in the pool of available male labour (such as would occur following the post-reunification lay-offs in the East) would hinder female chances of employment in male-typical occupations.

### West Germany: Structure of opportunity for women in the former FRG<sup>36</sup>: 1997

In 1997, according to statistical tables from the Statistisches Bundesamt, 61% of women of working age in West Germany were registered as of employed status – a significant rise on the 52% seen in 1981. However, as can be seen in Table 3:22 there are two particular developments in employment trends during this period: The first is that during the two years bridging German reunification, the percentage of working age women in employment leaped from 55% in 1989 to 60% at the end of 1991 (only rising by a further 1% by 1997). The second is, although the size of the labour force overall first increases and then starts to decrease, women sustain their increase.

	% working age females in employment	females % of workforce	% change in total workforce size (1989 = 100%)	% change in number of female workers (1989 = 100%)	% change in number of male workers (1989 = 100%)
1989*	55	39	(100% = 27742000)	(100% = 10794000)	(100% = 16948000)
1991**	60	40	+7	+11	+4.5
1997**	61	43	+5	+14	-0.3

Source: \* Statistisches Bundesamt, 1989  
 \*\* Statistisches Bundesamt, 1997

Table 3:22: Changes in the West German labour market after reunification

In 1997, the dataset for the West comprises 22,096,080 workers, of which 9,525,448 are female<sup>37</sup>. As before, category 6 ('other workers') is removed for the analyses. This category accounts for 0.3% of the total workforce in the data set, and for 0.2% of all females: the total number of workers used in the analyses, therefore, is 22,021,715 of which 9,502,218 are female.

<sup>36</sup> After reunification, West Germany is commonly referred to as the Früheres Bundesgebiet (former Federal area).

<sup>37</sup> As for 1981, the data used for the 1997 analyses were derived from statistical tables supplied by the Federal Institute for Labour (Bundesanstalt für Arbeit, Nürnberg) and transformed into machine-readable format by the author. Data cover workers required to pay social insurance and thus exclude categories such as self employed, family dependant workers, and civil servants (Beamte). These missing categories accounted for approximately 18% of the total labour force. Caveats concerning the structure, suitability and reliability of the data and their analyses made in the section covering West 1981, and changes concerning the inclusion and exclusion of some sub-minor categories in the German classification of



## Gender segregation in the Labour Force of West Germany: 1997

### Highest level of aggregation

The results of applying the measure of typicality to the West data at main category level are shown in Table 3:23. In comparison to the pattern of distribution seen in 1981, more main occupational groups are now classed as typical and atypical for women and fewer as gender neutral, although there is a decrease in the percentage of the labour force found in gender neutral and female-atypical areas but an increase in the percentage found in female-typical. Of particular importance is the increase in the percentage of male workers seen in occupations classed as female-typical.

	% all women workers	% all male workers	% all workers	% of occupational categories
<b>Atypical</b> ≤30% women	11	64	41	59
<b>Gender Neutral</b> 31% - 69% women	56	29	41	28
<b>Typical</b> ≥70% women	32	7	18	13

Table 3:23 East 1997: Highest level of aggregation: Workers and categories by number and percent, according the measure of typicality.

In terms of main occupational areas that are atypical for women (see Table 3:24) all those found to be atypical for women in 1981 are still atypical in 1997, with the addition of the paper industry<sup>38</sup>, which was gender neutral in 1981. However, although the other main atypical groups in 1997 are the same as in 1981, there are changes in the percentage of women in most areas. Women have increased their share in mining; construction; traffic and transport; security; and agriculture; and as carpenters; fitters and mechanics; machine operators; engineers; building outfitters; technicians and

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occupations made in the section covering the East in 1997, also apply here.

<sup>38</sup> Investigation shows that the industry overall has shrunk somewhat accounting for 1.2% of the workforce in the dataset in 1997 against 1.6% in 1981. More significantly, although the industry has declined very slightly, the percentage of males has increased from 69% in '81 to 73% in '97 (from 1.2% of all males in the dataset to 1.5% respectively) whilst the percentage of females has declined correspondingly.

Meister, but have reduced their share in the metal-, wood-, chemical-, and paper industries; and as assistant workers.

Fewer main occupational areas are gender neutral in 1997: As noted, the paper industry is now atypical but education and social work (also gender neutral in 1981) now has concentrations of women that render it female-typical (and thus conforming to Anker's list of traditional female-dominated occupations). The remaining gender neutral areas are the same as in 1981 but again, women's percentage share has changed: women have increased their share in the food industry; in organisation, administration and office work; as service clerks; as documentalists, and in culture-related work. They have lost ground in the glass and ceramic industry, as testers, packers and dispatch, in the leather and fur industry, and in assembly and installation work (from 52% share in 1981 to 40% in 1997).

<b>Atypical</b>	<b>% female</b>	<b>Gender neutral</b>	<b>% female</b>
mining	1	ceramics	31
construction industry	1	other workers	31
machinists	2	assembly and installations	40
carpenters	4	food industry	42
building material production	5	testers and dispatchers	43
fitter, mechanics	5	documentalists, culture related	47
electricians	6	leather/fur industry	50
painters	6	service personnel	50
engineers	8	sales	64
metal industry	9	organisation, admin, office	65
building outfitter	10		
wood industry	15	<b>Typical</b>	<b>% female</b>
transport	15		
technicians, Meister	20	social work and education	70
security	20	textile industry	71
chemical industry	24	general service	79
assistant workers	24	health	84
agriculture	27		
paper	27		

Table 3:24 West Germany 1997: Main occupational groups by degree of typicality for women: Highest level of aggregation

Four main occupational groups are now female-typical and, as for the atypical and gender neutral groups, although there is little change from 1981 to 1997 in the



occupational areas classified as typical, there are differences in the actual percentages of women in the individual groups: Education and social work shows an increase (from 67% in 1981 to 70% in 1997) whilst the percentage of women employed in both the textile industry and in general services is lower in 1997 and the percentage of women employed in the health sector stays the same. Taken together, the results at this level of aggregation suggest an increase in gender segregation.

#### Lowest level of aggregation

Results of applying the measure of typicality at the lower level of aggregation are shown in Table 3:25. As can be seen, the trend towards greater gender segregation in the West between 1981 and 1997 seen at the higher level of aggregation is more obvious at this lower level - 68% women and 71% men now work in occupations where 30% or less members of the opposite sex also work. However, there are differences in the trends for men and women: Whilst the percentage of female workers increases in atypical and typical, and decreases in gender neutral occupational areas, the percentage of male workers decreases in male-typical areas and increases in both gender-neutral and female-typical areas. In addition, it can be noted that, in comparison to the results for the same analyses in 1981, a larger percentage of all workers are working in occupational areas classed as female-typical in 1997 (21% in 1981, 36% in 1997).

	% all women workers	% all male workers	% all workers	% of occupational categories
<b>Atypical</b> ≤30% women	10	71	45	57
<b>Gender Neutral</b> 31% - 69% women	22	17	19	29
<b>Typical</b> ≥70% women	68	12	36	13

Table 3:25 West 1997: Lowest level of aggregation: Workers and categories by percent, according the measure of typicality

When the main occupational areas that are atypical for women are explored at the lower level of aggregation, although women are represented in all sub-minor categories, in

some their share is very small. To use Anker's list of traditional male-dominated occupations as a guide, within construction (including carpenters) the highest percentage of women in any sub-minor category is 21%, and most sub-minor categories comprise less than 9% women (the same holds true for mining, machine operators, and the electrical industry). In the metal industry, women are also severely under-represented, and where they are found in any number, it is (as was seen in 1981) primarily as unskilled workers. For example, women form 51% of riveters but 96% are classed as unskilled; they also account for 69% of all solderers but 93% are listed as unskilled. Women are also found working in specialised high-skill areas, such as precious metal smiths (54%; of which 48% are skilled workers) but this is much less common. Security too remains atypical and it should be remembered that, because of the high percentage of Beamte (government workers) associated with this occupational group, the percentage gives an over-optimistic impression of women's representation.<sup>39</sup>

In traditional male-dominated professional areas, changes in the percentage of women represented since 1981 are mixed, but in several they have made significant gains. The highest gain for women is as vets – atypical in 1981, in 1997 they account for 48%: In other areas, gains are between 10 and 20 percentage points over the 16 year period, i.e., in 1997, as physicists, mathematicians, and technical specialists, women account for 19%; as bio-tech specialists, 59%; as ministerial and political civil servants, 23%; as leaders of associations and administrative leaders, 23% and 27%, respectively; as legal and tax advisors, 35% and 67%, respectively; as senior court officials, 63%; as university teachers, 35%; as natural scientists, 29%; and as doctors, 39%. More modest increases are seen for gymnasium teachers, company leaders and judges (a gain of 1, 3, and 8 percentage points respectively).

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<sup>39</sup> Using Mikrozensus data, a better estimate would be nearer 15% and not 20%, as calculated from the dataset.



<b>Engineers</b>		<b>Technicians</b>	
<b>Occupational area</b>	<b>% female</b>	<b>Occupational area</b>	<b>% female</b>
machine engineer	3	mining metal technician	2
mining metal engineer	3	machine construction tech	4
electro engineer	4	electro technician	5
other engineers	8	construction technician	7
other process engineers	8	other technicians	15
surveying engineer	11	phys math tech specialist	19
agricultural engineer	15	other production technicians	21
architect building engineer	16	surveying technicians	23
chemist, chemical engineer	17	technical ships officers	24
		chemical physic technicians	37
		chemical laboratory work	48
		dental technician	51
		bio tech specialists	59
		photo laboratory work	64

Table 3:26: West 97: Engineers and technicians by percent female workers

Women also increased their representation as engineers between 1981 and 1997, but at 8% overall they are still significantly underrepresented (see Table 3:26): At the lowest level of aggregation, the highest percentage female representation is within the chemical industry, where they account for 17% of all chemical engineers, the lowest is as machine and mining engineers, where they account for just 3% respectively. As technicians, women fare rather better and account for 21% of all workers in sub-categories representing such workers (an increase from the 15% seen in 1981). Taken as individual sub categories, however, it is evident that it is still primarily atypical in the West for women to work as technicians and as engineers. Finally, with regard to high status positions, as Meister women in the West remain severely under-represented: In 1981 they accounted for only 2% and sixteen years later in 1997 this hasn't changed. In fact, numerically, women have actually declined in their representation, there being 250 fewer in 1997.

The four main occupational categories that are typical for women all equate to Anker's list of 'most likely to be female-dominated'. The pattern seen in 1981, whereby even in highly female-dominated occupational groups, men are proportionately more

likely to hold higher status positions, and women more likely to be employed as unskilled labour is seen again in 1997. For example, in the main category - general service, in the majority of sub categories, women are predominantly classed as unskilled workers: Only as hairdressers do they exceed the 30% atypical boundary as skilled workers (but note that although only 7% are male, 67% of them are classed as skilled workers). In main category 'textiles'<sup>40</sup>, the overwhelming majority of women workers are classed as unskilled – only in the sub-minor category 'cutters' is the percentage of women as unskilled less than 50%. The same pattern of gender segregation is found when gender neutral main occupational categories are observed at the lowest level of aggregation. In fact, in only 10 of all 102 categories that measure as gender neutral at the lowest level of aggregation are women found to be in the majority as skilled workers. An analysis of the main gender neutral occupational groups show the same pattern with very few exceptions. Most of the exceptions are found within sales and in organisation, administration and office. In the former, males are primarily engaged as retail and wholesale clerks, and as forecourt attendants, but even so, women only exceed males as skilled workers as pharmaceutical assistants and in pharmaceutical sales. In the latter, more women than men are classed as skilled in the traditional female-dominated areas, such as secretarial work.

#### Lorenz curve and Gini coefficient

The Gini coefficients reported for the highest and lowest level of aggregation are 0.278 and 0.282 respectively, thus conforming to the trend shown in the measure of typicality, although the differences between the two levels of aggregation here are marginal. More importantly, however, the Gini coefficients support the results of analyses using the

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<sup>40</sup> It should also be noted that this is an industry in decline (as in the East) and that between 1981 and 1997 the total workforce has been reduced by approximately three-quarters. In addition, the overall percentage of women has declined slightly (from 78% in 1981 to 71% in 1997). This may be linked to the fact that women accounted for more of the unskilled labour so that they may have been more affected by redundancies than men.



measure of typicality in suggesting that gender segregation has increased since 1981, and that the distribution of women across the labour force is still less even than in the East. Further, given the increase in numbers of women in the labour force in '97, it lends weight to the suggestion that increases in female labour market participation does not equate to a rise in overall gender equality and is more likely to lead to higher levels of segregation, especially if the increase is channelled into female part-time workers.

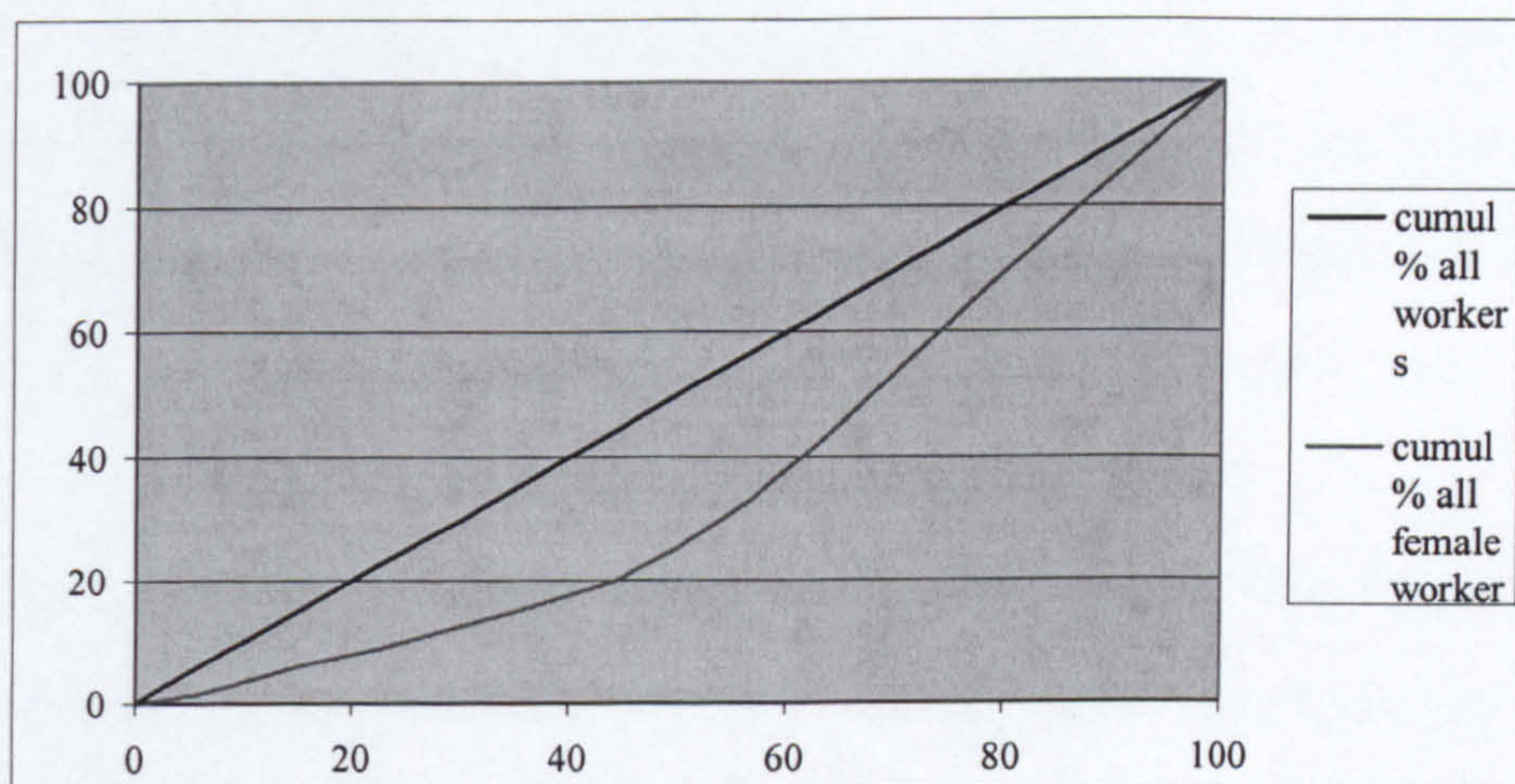


Diagram 3:10: West 97: Lorenz curve: Distribution of female workers: Highest level of aggregation: Gini coefficient: .278

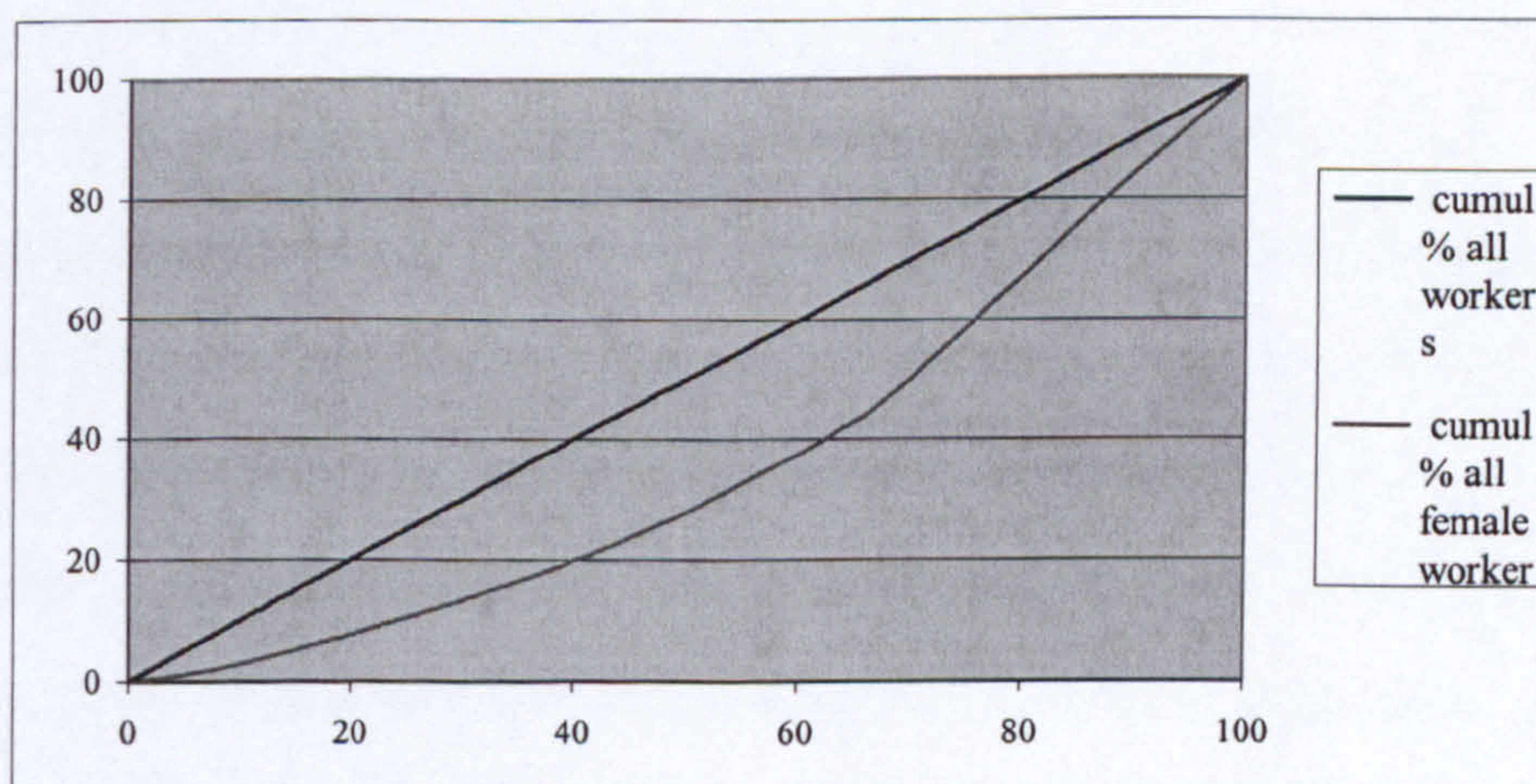


Diagram 3:11: West 97: Lorenz curve: Distribution of female workers: Lowest level of aggregation Gini coefficient: .282



## Conclusion

By 1997, females make up a significantly larger proportion of the labour force in West Germany than they did in 1981. However, this increase in the numbers of women has not resulted in less gender segregation across the occupations. The majority of women are still concentrated into a smaller number of occupational areas than their male counterparts, and have much less chance of being a skilled worker (4% female to 31% male) and an almost equal chance of being an unskilled worker (22% female to 28% male). Women are present in all occupational sub-categories but where they are present within male-dominated occupational areas, they are typically found as unskilled labour or concentrated in areas of highly specialised work that approach being (or are) female-typical.

Overall, women in the West in 1997 are predominantly white-collar workers, found in traditional female-dominated occupations such as health, social care and education, services and administration. They are not likely to hold leadership positions, only reaching the threshold of gender neutrality as leaders within administration, even though females account for 65% of all workers in this area. They are, however, on a par with males as dentists, vets, accountants, insurance clerks, bank and building society workers, graphic design, vocational teachers and food production (to select just some areas where workers approach a 50/50 gender ratio), and have a greater presence than males as senior court officials, tax advisors and within publishing and book sales.

It must be remembered, however, that in West Germany, civil servants (Beamte), the self employed and family dependant workers account for approximately 18% of the labour force at this time, and are not included in these calculations. Consequently, some categories, such as teachers (particularly Gymnasium teachers and university professors), judges, soldiers and police, and all areas included in government administration, will be slightly under-represented within the data set. While this could



distort some of the findings reported, it would seem that when these groups are included, the effect is to diminish levels of female representation and so support the arguments of gender segregation in the West raised earlier .

## **Structures of opportunity for women's employment: East/West Germany 1981 and 1997**

### **East/West 1981**

In the East, significantly more women of working age were in employment in 1981 (86%) and accounted for a much greater share of the labour force (49%) than was the case in the West, where just over half of women of working age were engaged in the labour force (52% - almost a third of these working part-time) and accounted for 39% of the labour force. These statistics, combined with ideological differences concerning the economic and social role of women in the two regions, give a strong clue to regional differences in the structure of opportunity for women's career choice. Put simply, for the vast majority of women in the East, full-time work combined with child-rearing was the socially accepted norm, whereas for women in the West (depending on individual circumstances) there could be a choice as to whether to make work a life-career, to combine it with family responsibilities, or even not to work at all: Where a family included young children, social expectations were for the mother to put their care before her career<sup>41</sup>.

The East's labour force was found to be highly segregated, whereby, at the lowest level of aggregation, 60% of workers were working in same-sex concentrations of 70% or higher. However, in the West, gender segregation was found to be more extreme, with 70% of the labour force working in respective gender-typical occupations. Thus, taking the percentage of a workforce in gender-neutral occupations as indicative of the level of gender-segregation, it can be seen that the East in 1981, with 40% of its workforce in gender-neutral occupations at the lowest level of aggregation, was less gender-segregated than the West, where 30% of its workforce were so distributed. Again, however, the caveat concerning regional comparison being limited

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<sup>41</sup> These differences in social attitude are highlighted by findings from the ALLBUS survey, which are



due to differences in East/West occupational classification schemes at this time must be noted.

In terms of regional differences in where women were working, at main occupational category level, both regions show a large degree of similarity in terms of the occupational areas contained within the three levels of typicality (see Table 3:27). In fact, after taking into account differences resulting from the occupational classifications themselves, with regard to areas which measure as typical and atypical for female employment, there is little inter-regional difference at this level of aggregation. The three female-typical groups in the West in 1981 are also female-typical in the East, and the other traditional female-typical occupational areas (sales, education and social care, and administration and office work) that have high percentages of female workers but which do not pass the 70% gender neutral/typical boundary, are found to be female-typical when regional differences in the percentage of women in the labour force are controlled for. Three of the female-typical areas in the East did not exist as separate categories in the West and are subsumed within other occupational areas: Post and telecommunications is one such example, being part of the larger occupational category of traffic and transport in the West. However, when the categories in the West that correspond to those of post and telecommunications in the East are analysed, then women in the West were employed in these areas at a concentration of 33%, which is very different to the 75% concentration found in the East.

In the same way, female-atypical occupational groups show strong regional similarity at this time, and many differences that are seen can be related to differences in classification. However, notable differences are seen in the areas of security, technicians, and engineers (including chemists and physicists) which are atypical in the

West but gender neutral in the East<sup>42</sup>. As discussed previously, however, the comparison of security services is especially problematic: In the East, it cannot be certain that the occupational area 'active in other professions' does refer to security (and even when it does, it may include ancillary workers) and the West dataset does not include Beamte, a group to which most professional armed service personnel and police would belong.

Concerning women in the professions, claims have been made that women in the East were particularly advanced in such areas as politics, law, and medicine, and their numbers in these professions are offered as proof of 'genuine equality of opportunity' in its society (Marsh, 1983). Conversely, it has been claimed that women in the West were particularly underrepresented in these areas (Rosenberg, 1991). First, the extent of women's presence either in the workforce or in an individual occupational area cannot indicate gender equality. Second, whilst analyses of the labour forces in East and West Germany support the concept of higher numbers of women in these professions in the East – for example, 53% of doctors in the East were women compared to just 28% in the West - there are also good reasons to indicate that this did not equate to greater gender equality and the true advancement of women in the East.

With regard to doctors, discussions with former health-care workers in Jena, which was a main regional hospital town in East Germany during the time of the GDR, indicate that although the majority of doctors in the many Polyclinics were female, the Principals of these clinics, the heads of specialist areas, and the directors of hospitals, were very largely male<sup>43</sup>. Further, the medical profession in the GDR was in the lowest quarter of the professional salary range (Lane, 1983).

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<sup>42</sup> As engineers are not shown as a single occupational group in the East at this level of aggregation, this comparison is based on calculations from the lowest level of aggregation.

<sup>43</sup> Information for 1979 gives 20% of doctors in charge of health districts as female (Presseinformationen, 21, 1979, cited in Lane, 1983).



West '81	% female	East '81	% female
<b>Female Atypical</b>		<b>Female Atypical</b>	
construction industry	0.4	construction industry	6
mining industry	1	machine operators	8
machine operators	1	mining industry	9
carpenters, model builders	2	energy	11
fitters and mechanics	3	metallurgy/material science	14
engineers, chemists, physicists	3	theology	15
building materials production	5	electronics industry	17
Electronics industry	6	wood industry	17
painters, lacquerers	6	water industry	20
building outfitters	9	metal product + process	21
metal production and processing	11	traffic and transport	22
traffic and transport	14	building materials production	29
technicians, Meister	15		
security and control	17		
wood industry	18		
agriculture	21		
<b>Gender Neutral</b>		<b>Gender Neutral</b>	
chemical industry	30	geo sciences	33
assistant workers	30	leaders	33
paper industry	31	mathematics	42
glass, ceramics industry	35	food industry	42
art and culture related	40	glass/ceramics industry	46
food industry	41	agriculture	47
service clerks	44	active in other profs (security?)	47
testers, packers, and distribution	49	philosophy/history/science and law	49
assembly and installations	52	culture and art related	49
leather and fur industry	62	veterinary medicine	50
sales	64	precision optics/mechanics	51
organisation, administration and office	64	physics	53
social work and education	67	department officials	54
		automation technology	58
		cellulose and paper industry	60
		reprographics	63
		psychology	66
		chemical industry	67
		<b>Female Typical</b>	
		leather and fur industry	72
		literature and language sciences	74
		bio sciences	75
		post and telecommunications	75
		education	78
<b>Female Typical</b>		textile industry	87
textile industry	78	human medicine/ pharmacy	88
general service	82	trade/gastronome/service	88
health	84	administration, organisation, economics	88

Table 3:27: East/West comparison of main occupational categories by measure of typicality and female percent

The position of judge in the East was also different in terms of status to that in the West:

In the East it was as much a political position as a judicial one, and judges were not

independent to find and pass sentence, as were their respective numbers in the West. Rather there was very strong political influence whereby judges would be directed how to find and sentence in certain cases.

Even so, these professional areas were obviously more accessible to women in the East than in the West. This is further supported by the 28% for female representation as doctors in the West most likely being an overestimation: Many doctors in the West are self-employed and as such are not included in the West dataset. When Mikrozensus data (which include Beamte and the self-employed) for 1980 are analysed, the percentage of women drops to 25%. A similar situation is found with regard to the legal profession. In the 1981 data set, women account for 31% of judges (Richter) and 22% of state attorneys (Staatsanwälte) but Mikrozensus data show the share to be closer to 14%, respectively. In sum, women in the East in 1981 had a greater chance to work in these professions than women in the West, although, in the case of judges, without the same level of autonomous power and authority, and, in the case of doctors, without the financial or social status associated with the same-named occupations in the West.

Another profession where significantly more women were active in the East in 1981 than in the West is that of engineer. Even so, they only accounted for 31% overall in the East and were better represented in female-typical occupational areas, such as the food and textile industries. In addition, there seems to have been a broader use of the term engineer in the East and it included workers with non-university qualifications, many of whom were women. Nevertheless, this has to be seen against the extreme under-representation of women as engineers in the West where they accounted for just 3%. The related occupational field of technician was also found to be more accessible to women in the East than in the West in '81 – so much so that in some areas women were over represented, as for example in the chemical industry. However, women were also well represented as technicians in areas more traditionally associated with male-



dominated occupations, such as specialist physics and maths environments. In the West, only 15% of workers in occupations labelled as technicians were women, and even here the percentage of women in the individual occupational areas followed a gender-typical pattern of distribution. For example, they accounted for just 15% of technicians in the field of maths and physics, but for 78% of those in photo laboratory work.

Similar regional differences are found concerning women in leadership positions: Whilst the data and other sources suggest that women in the East outnumbered women in the West in such positions, in the East the title of 'leader' did not necessarily confer power and autonomy, as might be associated with similarly-named positions in the West. In addition, where women were in leadership positions, it was neither in areas of high status, nor at the topmost level but primarily as middle managers, and frequently within female-dominated occupational areas. Again, however, more women in the East than in the West experienced such positions, even if the status was not always that implied by the job title.

In general, although the majority of women in the East of Germany in 1981 worked in occupations with concentrations of 70% or more women, many women did work in areas and occupations traditionally associated with male employment. Indeed, there are no occupational categories in the dataset where women were not employed: Women were working, for example, as carpenters, bricklayers, industrial oven builders, deep sea fishers, civil engineers, pipe fitters, locksmiths, farm machinery fitters, and drivers. However, they were comparatively few, and in none of the preceding occupations did women exceed 1% of workers in the area. In some traditionally male-dominated areas, such as the metal industry, women were employed in larger numbers. For example, approximately 10,000 women (of whom 7,000 were classed as skilled workers) were working in metal production, although this only accounted for 14% of workers in the area. In the West, women were also found to be represented in all

occupational categories, e.g., as concrete layers, track layers, bricklayers, road workers, roofers, and pipe fitters - they were also driving earthmoving equipment and other excavation machines, and were involved in pipe installations, water construction, and oil and gas extraction. But here again, their numbers were very low, and significantly less than in corresponding areas in the East.

In sum, in 1981 there were strong inter-regional differences in levels of female participation in the respective labour forces, but strong similarities in the type and typicality of the work they engaged in. Women in the East had a greater chance of working in traditionally male-dominated occupations (including their participation in the professions, such as medicine, law or engineering) and to be blue collar workers, than women in the West. In the West, there was a much greater likelihood of women being classed as white-collar workers, of working part-time, or of not working at all, and a lesser chance of working in traditional male-dominated occupational areas.

### **East/West 1997**

By 1997, important changes can be observed in the labour forces of both East and West Germany, but most dramatic are those seen in the East. Here, following the introduction of a market-lead economy, the number of women in the labour force dropped by 33%, from 4.5 million to 3 million i.e., from 89% of working-age women in 1981 to 70% in 1997; likewise, their share of the labour force dropped from 49% to 45% over the same period. In the West, however, the number of working-age women in the labour force rose from 52% in 1981 to 61% in 1997, and their share of the labour force from 39% to 43%. In other words, a degree of convergence between the regions, at least concerning women's labour force participation rates, can be seen between 1981 and 1997.

Using the measure of typicality, analyses of the East '97 dataset at the lowest level of aggregation suggest that the labour force has become significantly more segregated,



with only 19% of workers employed in gender neutral occupations<sup>44</sup>. Fundamentally (see Table 3:28) the occupational areas found to be atypical for women in 1997 are the same as in 1981<sup>45</sup>, but some show change within themselves: For example, the construction industry has almost doubled its share of the workforce by 1997 but the percentage of women employees has dropped from 6% to 4%. In fact, the only atypical occupational group where the level of women's representation has not declined is the wood industry. Engineering is now atypical for women (accounting for 20% against 31% in 1981) although the effect of the reduced number of categories of engineer must be taken into consideration.

Whilst there is little change in main occupational groups that are female-typical in 1997, changes are seen in the percentages of women, and of the whole workforce, now found in some areas. For example, although health-related occupations employ the same percentage of female workers in '97 as in '81 the area itself has increased its share of the labour force from 3.5% to 6%.

Another example, with particular significance for the East, is the textile industry<sup>46</sup>. In 1981 it had employed approximately 218,000<sup>47</sup> workers (of which, 197,000, i.e., 90%, were female) but by 1997 this had been reduced to approximately 27,000, of which 22,000, i.e., 81%, were female. Thus, although the textile industry is still female-typical occupational area for women in 1997, the number of women employed is a fraction of that found in 1981.

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<sup>44</sup> It should be remembered, however, that the 1997 analyses are based on a different occupational classification scheme from that used in 1981.

<sup>45</sup> Some have been reorganised so that, for example, painters and carpenters, which were included in the construction industry in the GDR's classification system, are now presented as separate categories.

<sup>46</sup> This was one of the GDRs focused production areas according to the CMEA – Council for Mutual Economic Assistance - thus a major employer, and particularly of women.

<sup>47</sup> For East 81/97 comparisons in this area, all figures are minus engineers and Meister.

Occupational Area	East '97 % female	West '97 % female
construction industry	4	1
building materials production	5	5
fitter, mechanics	6	5
electronics industry	6	6
building outfitters	6	10+
carpenters, model builders	6	4
machinist operators	6	2
mining industry	7	1
painters, lacquerers	7	6
metal industry	8	9+
traffic and transport	18	15
security and control	18	20+
engineers	20	8
wood industry	26	15
chemical industry	31	24
technicians, Meister	35	20
ceramics industry	37	31
assembly and installations	39	40+
agriculture	42	27
assistant workers	42	24
paper industry	44	27
testers, packers, distribution	52	43
leather and fur industry	53	50
art and culture related	56	47
food industry	61	42
service clerks	66	50
sales	73	64
organisation, admin and office	74	65
social work and education	77	70
general service	81	79
textile industry	83	71
health	88	84

Key: + percentage of women in the West exceeds that of the East

Table 3:28: Main occupational categories with percentage female by region

Perhaps, though, the most extreme change concerning the structure of opportunity for women in the East in 1997 is within the category, organisation, administration and office. Between 1981 and 1997 the percentage of the workforce classed under this category rose from 5% to 19%<sup>48</sup> (excluding Beamte in 1997). Despite this increase and its classification as female-typical, in '97 it is less female dominated

<sup>48</sup> Part of this increase is due to differences in the occupational classification system of the East and West that changed the composition of this main group.



than in '81. This suggests an increase in male employment, which is in keeping with findings from other sources concerning trends in this sector in the West (Heinz, 1996) and concerning general trends in the East (Christmas-Best & Schmitt-Rodermund, 2001). However, because of classification differences in the East between 1981 and 1997, this cannot be said with certainty.

In the West in 1997, the main occupational groups found to be atypical in '81 are also atypical in '97, with the addition of assistant workers, and the chemical and paper industries. Within these areas, however, changes can be seen in the distribution of women: First, the building industry in the West, unlike that of the East, has decreased its share of the overall workforce but the percentage of women workers has increased slightly (from 0.4% to 1%): The same holds true for the area of traffic and transport. In addition, women show an increased representation as technicians and engineers, even considering that the category 'engineers' has increased its share of the workforce by 1% (no change is seen for 'technicians'). Women have reduced representation in the wood, paper, metal and chemical industries, and as machinists, carpenters and electricians. The only female-atypical occupation in which women have increased their share, whilst that of the overall workforce has remained constant since 1981, is in agriculture.

Fewer categories are now gender neutral but women have increased their presence in the food industry, in administration and office work, as service clerks, and in culture-related work. Little change is seen in main occupational groups that are female-typical: Social work and education is now included, general service shows an increase in its share of the overall workforce but a decrease in the share of women, while health shows an increase in its share of the workforce (whereby it almost doubles - from 4% in 1981 to 7% in 1997) although the percentage of women employed therein remains constant at 84%. As in the East, the textile industry employs far fewer workers

in 1997, accounting for 1% of the work force in 1997 compared to 2% in 1981: The percentage of women workers is also reduced, from 78% to 71%.

Overall, by 1997, a general pattern can be detected whereby women in the West show increased representation in the professions, but a decrease is found for women in the East. For example, women in the West have improved their position as engineers and technicians whilst in the East, women's position in these areas has declined (nevertheless remaining considerably higher than in the West). In other professions, however, women in the West have fared better, for example more women are now doctors, so that this category is no longer female-atypical, and they have increased their share in the legal profession as judges, senior court officials and legal advisors. In the East, whilst it is particularly difficult to track changes in women's representation between the time of the GDR in 1981 and post-reunification in 1997 in occupations relating to law, data for 1997 would seem to suggest that this is one area where women in the East had also increased their position. Certainly, in 1997, they are well represented as in the general category of judges (43%), as administrative leaders (50%), and especially as senior court officials, which, with a female share of 75%, is female-typical.

In sum, the structure of opportunity for women in the East in 1997 would seem to be more weighted against women entering atypical careers than in 1981 for two main reasons: First, because many of the male-dominated industries were in decline, women would have faced greater competition from males for entry into these areas, and many of those already employed there would have at least shared the risk of redundancy, if not been at increased risk due to their general presence in lower status positions. Second, greater (and more secure) opportunities were on offer in other, more traditional areas. These female-typical areas of work may also have held more appeal for women who had had restricted, or no, access to more (seemingly) glamorous, comfortable work



(such as beautician, travel agency work, or hotel receptionist). Other research has shown that hopes of realising such 'dream careers' did mean that many women in the East looked for work in such female-typical occupations (Christmas-Best & Schmitt-Rodermund, 2001). In the West, although women show a larger presence in the labour force, and have increased their hold in many professional areas, they are still found predominantly in female-typical occupations, and are still severely underrepresented in a wide range of occupations.

### **Social attitudes to the role of women**

Before concluding this section on the structure of opportunity for women's atypical career choice provided by the respective contexts of East and West Germany, before and after reunification, it is necessary to have some measure of regional attitudes towards the social and economic role of women. As this cannot be assessed from the datasets used for the analyses of segregation, as was set out in Chapter 2, data from the ALLBUS<sup>49</sup> Baseline-Study 1991, and ALLBUS 1996 population survey can be used. In 1991, following reunification, the ALLBUS Baseline-Study measured attitudes in the two regions to a wide variety of social issues, one of which was attitude to gender roles, especially to women's role in the family and in work. The survey was repeated in 1996, allowing trends in attitudes in the two regions to be detected.

A battery of six statements covering attitudes to the role of women in the family and bringing up children were presented and respondents asked to indicate their opinion to each. (Answers given against a Likert-type scale, 1 = 'Agree absolutely' to 4 = 'Absolutely disagree'.) As can be see from Table 3:29, a clear regional pattern is seen in the responses to the statements, suggesting a greater adherence to traditional stereotypical gender-role attitudes in the West than in the East. More importantly, a

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<sup>49</sup> ALLgemeine Bevölkerungsumfrage der Sozialwissenschaften (General population survey from the social sciences). Conducted biennially by the Central Archive for Empirical Research, University of Köln and the Centre for Survey Methods and Analysis, Mannheim

greater disparity between the regions is seen in '96 than in '91, whereby there is a greater tendency to reject the stereotypical attitudes in the East in '96 than in '91, whilst the West shows greater stability in acceptance over time.

	West		East	
	in full agreement or tending to agree, in %			
	1991	1996	1991	1996
1. A working mother can have just as loving and trusting a relationship with her children as a mother who isn't employed.	73	77	90	92
2. It is more important for a woman to support her husband's career than to pursue a career herself.	32	36	30	25
3. A small child undoubtedly suffers when its mother is working.	76	76	58	49
4. It is better for all concerned when the man is in full-time work and the woman stays at home to care for the children and the home.	50	50	33	26
5. It is helpful for a child to have a mother who is working and not totally focussed on the home.	34	36	61	68
6. A married women should give up her job when jobs are scarce and when her husband can support the family.	52	48	44	33

Source: ALLBUS Baseline Survey, 1991, & ALLBUS, 1996

Table 3:29: East/West attitudes to the role of women in the family, 1991 and 1996, by percent

In terms of the stereotypical gender role of the man working and the woman caring for the family (#4), it is important to note that half of the sample in the West, at both points of measurement, agree or tend to agree with this suggestion, but that in the East, agreement drops from one third in '91 to just over one quarter in '96. In support of this, far fewer people in the East feel that children suffer from having a working mother, rather seeing it as a benefit to have a mother with a wider social role (#5).

Although the statements presented in the survey focus on the role of women within the family, rather than on women in society per se, the regional differences in response to the statements overall lend support to the hypothesis that social attitudes in the East were in general more accepting of women's work role than that seen in the



West. It is not implausible, therefore, to infer from these findings that women in the East would have found easier acceptance of engaging in a gender-atypical career than women in the West.

## **Conclusions**

Against a background of differing East/West attitudes and beliefs concerning the social and economic role of women during the time of German separation, the hypothesis was raised that where a macro-environment does not emphasise the traditional female role in society, especially concerning the woman as prime child-carer and where it actively supports an egalitarian economic role for women, women will be more likely to enter traditionally atypical careers resulting in a more even distribution of women across occupations i.e. to lower levels of gender segregation in the labour force. By this definition, it was expected that East Germany prior to reunification would have been a more supportive context for women to enter traditional atypical careers than the context provided by West Germany, and that following reunification it would have become less supportive as it changed from a centrally controlled to a market-lead economy.

First, in support of the hypothesis, East Germany can be seen to have been ideologically supportive of women's economic role and of their full-time participation in the labour market - so much so that it was the norm for a woman of working age to be in full-time work and for her children to be cared for during working hours in an all-encompassing, state-organised child-care system – and more women were found to be in traditional male-dominated occupations in the East in 1981 than in the West at the same point in time. In terms of gender segregation, taking the stance that where a labour market is most egalitarian, the majority of its workforce will be working in concentrations between 31% and 69% (i.e., in occupations classified as gender-neutral) then the East did not provide an egalitarian structure of opportunity for women, but it did provide a more egalitarian structure of opportunity than the West. There is also

evidence from the data that women in the GDR were far from equal partners with their male colleagues, that the labour force was highly gender-segregated, and that where they worked in atypical areas it was often as unskilled labour<sup>50</sup>. In leadership positions, women were subject to Putnam's Law of Growing Disproportion (Putnam, 1976) whereby the more influential the post the less women were likely to be found. That women were not on an equal footing with men is also borne out by the effect of reunification: The higher rate of unemployment for women following reunification was undoubtedly linked to their high presence in low-skill, low status positions in over-staffed industries, and in the heavily state-subsidised welfare services (such as running the crèches and staffing the work canteens) that were inevitable targets for pruning under a market-lead economic system.

The situation in the West at this time also supports the hypothesis in that women accounted for a much lower percentage of the labour force than in the East, and far fewer women were found in traditional male-dominated occupations, especially the professions. The Gini coefficients also indicated a less-equal distribution of women across the labour force than was seen in the East. However, it would seem that part of the effect is lost when differences in the size of women's presence in the respective labour forces is controlled for.

As was suggested in the second part of hypothesis 1, after reunification and the introduction of a free market economy in the East, a less supportive context for women's atypical career choice was found: Although the percentage of women in the labour market was still much higher than in the West and women still formed a large percentage of the workforce, as expected, fewer women were found to be working in traditional male-dominated occupations and there was a greater concentrations in female-typical areas. In addition, the Gini coefficient indicates that by 1997 the

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<sup>50</sup> This is supported by the findings of other recently published research into occupational segregation in



distribution of women across the labour force in the East had become closer to levels found in the West.

In sum, the labour forces of both regions were found to be highly segregated and although there had been movement over time, segregation remained high. In addition, great similarity was seen at the higher level of aggregation in the areas in which women were working. Nevertheless, despite these regional similarities, significant differences were also found and, as it is improbable that these differences could be biologically-rooted, it is more realistic to assume they were context-driven. The theory of contextual influence is further supported by changes seen in the area and level of these differences following reunification and the associated contextual change. The findings of this chapter, however, also suggest that patriarchy may be a prime mover concerning the typicality of women's career choice, as suggested by the literature. Across all four labour markets studied, regardless of time, economic or political system, where women worked in male-dominated areas it was primarily as unskilled workers or in female enclaves performing highly specialised tasks, and where males worked in female-dominated areas it was primarily as foremen, supervisors, managers or other positions of authority. However, before conclusions can be drawn concerning the effect of context, the extent to which internal factors influence the typicality of women's career choice must be addressed.

## **Chapter 4: A causal model of factors influential in the typicality of women's career choice**

The second hypothesis proposes that a variety of internal factors are active in the atypical career choice of women but that the extent to which the individual factors are functional is dependent on context: Where a context is supportive of gender equality and women's work role, fewer internal factors will play a significant role in women's atypical career choice. Taking East Germany prior to reunification as an example of a supportive context for women to make atypical career choices, and West Germany prior to reunification, and East and West Germany following reunification, as less supportive contexts (see Chapter 3), it is expected to find fewer internal factors significant in the prediction of women's career atypicality in the East prior to reunification than for the other groups of women. In other words, the strength of the relationship between the internal factors and typicality of women's career choice is expected to vary by context and over time depending on the supportive nature of the context in question.

The second part of hypothesis two suggests that, as the family remained the main social unit in both regions, factors relating to parents and family background will be particularly influential in the typicality of women's career choice. However, it is expected that the relationship will be stronger in the West than in the East due to the greater freedom of individual choice in the West and the higher level of state control over the workforce in the East. Following reunification, it is expected that these differences will be less evident as greater individual freedom in career choice and the effect of market forces become evident in the East.

In order to test the hypothesis, a model is proposed whereby factors implied by the literature as influential in the typicality of female career choice (home background, personal attributes, childhood play and leisure interests, age of physical development,



educational level, and focus of study) have a direct relationship with the dependent variable - level of career choice typicality. It also proposes that of these, two factors have a particular influence on the typicality of female career choice - educational level and subject preference – and that these not only have a relationship with the dependent variable in their own right but that they also act as mediators for most of the other factors. The theoretical model is based on the work of Eccles et al. (1994) and their causal model of women's achievement-related choices and on the work of Astin (1984) and her sociopsychological model of career choice and work behaviour (see Chapter 1 for details of both models). However, the model is also exploratory in its combination of factors and in the relationships proposed between them i.e. some of the pathways proposed by the model are not underpinned by empirical evidence in the context of career choice typicality but are included because a relationship can be inferred from empirical evidence related to associated areas (as for example in the case of the relationship suggested between involvement in routine female-typical household tasks and typicality of career choice). Finally, in order to test the impact of context and structure of opportunity, as proposed by Astin (1984), the model is tested with data from two different contexts and different structures of opportunity (namely, East and West Germany) and from two different time points (i.e., 1991 and 1996).

The proposed theoretical model is necessarily complex (see Diagram 4:1): Much of past research on gender issues relating to the intricate subject of women's career choice has examined the effect of single factors or constructs, such as achievement motivation (Gustafson et al, 1992) or personality (Feingold, 1994) or looked at subsets of possible mediating variables. Recently, however, there has been a call for a move away from the study of only 'main effects' and for research to encompass a wider array of factors (Schulenberg, Goldstein, and Vondracek, 1991; Eccles, 1994)

### Background to the factors<sup>1</sup> included in the model.

#### Home Background and Interaction with Parents:

As supported by the literature findings discussed in Chapter 1, the model suggests a direct relationship between level of parental education and job status, i.e., parental SES (*Parents*)<sup>2</sup> and the degree of typicality of their daughter's career choice, and an indirect relationship via educational level (see Sewell & Hauser, 1975; Murrell, Frieze & Frost, 1991; Mau, et al, 1995; McKenna & Ferrero, 1991; Hannah & Kahn, 1989; Moses, 1997). Kohn (1984) also found that parental SES profoundly influenced parental values and attitudes to child-rearing, and that low levels of parental SES was strongly correlated with valuing conformity, whilst higher levels of parental SES were associated with approval of self-direction in their offspring (Vondracek, Lerner & Schulenberg, 1986).

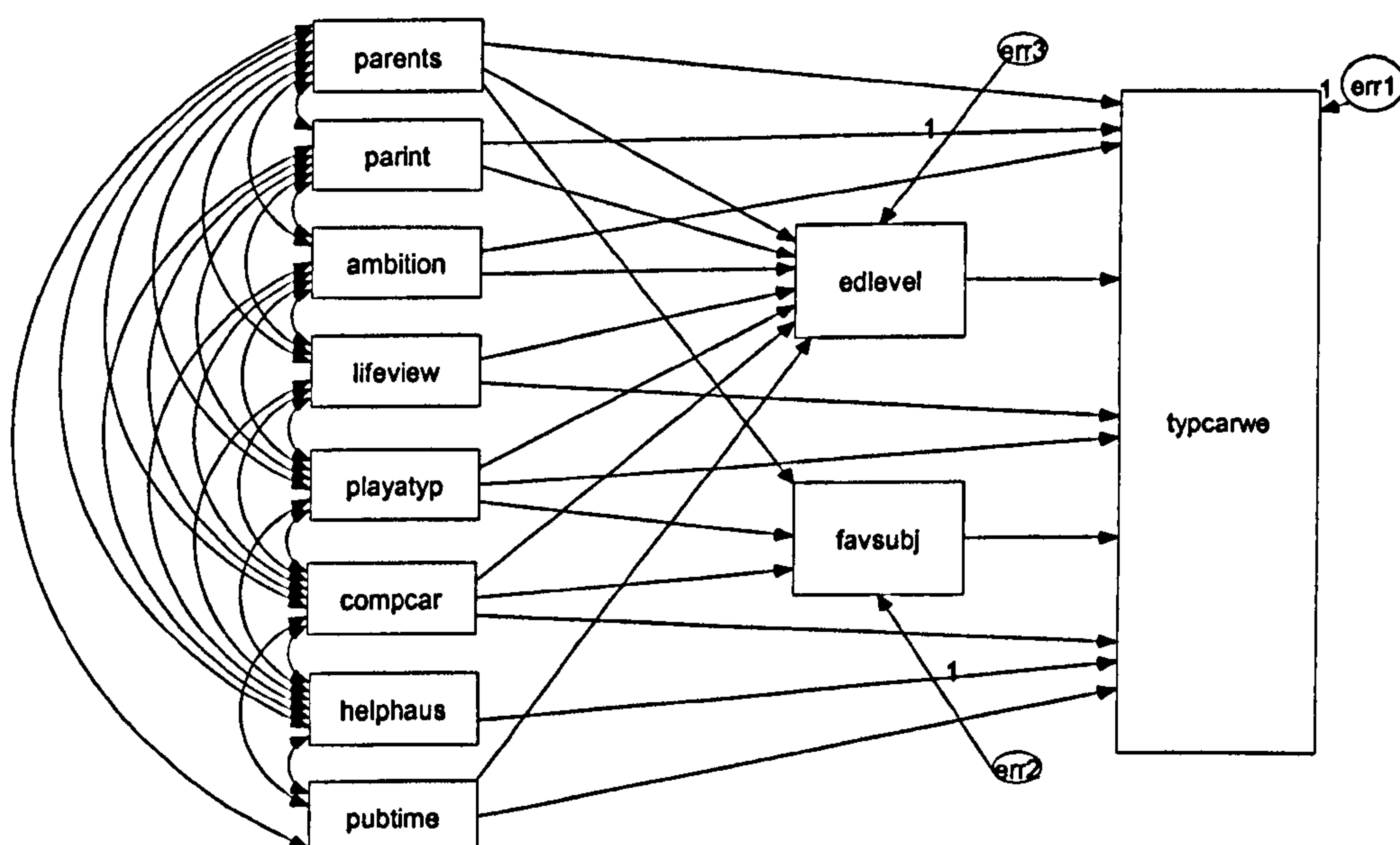


Diagram 4:1 Causal model of women's atypical career choice

<sup>1</sup> See Ch.1 for a full discussion of the empirical evidence for the inclusion of the factors incorporated into the model.

<sup>2</sup> Variables used in the model given in italics.



The proposed relationship between parental SES and typicality of career choice and educational level is also supported by theories, such as Bourdieu and Paseron's (1977) theory of social reproduction, whereby the cultural capital acquired in middle-class homes provides access to networks which facilitate entry into middle-class (professional) occupations, and Côté's (1996) theory of identity capital, which individuals draw upon to meet the demands of life tasks, such as career choice, and which is said to be heavily influenced by home background. Concerning the suggested relationship between parental SES and interest in Maths and Physics, the reasoning is that as lower levels of parental SES have been found to correlate with a greater degree of conformity, higher levels of parental SES will indicate greater support for their daughter's interest in these female atypical subjects.

The model also suggests that parental investment (*Parint*) in their children through frequently engaging with them in joint activities, such as playing sport, reading and making music together, and sharing hobbies, has both a direct and indirect influence on the typicality of their daughter's occupational choice. The direct relationship is suggested through the increase in children's cultural capital from engaging in such activities, as well as strengthening the effect of parental role modelling and social networking (see Ary, Duncan, Duncan & Hops, 1999; Flannery, Williams & Vazsonyi, 1999). The indirect path via educational level is based on findings that high levels of joint parental/child activities influence a child's overall achievement motivation, which has been shown to correlate with higher levels of academic aspiration and attainment, which in turn correlates with a higher likelihood of non-traditional female career choice (Stecher, 1999; Hickman, 1995).

#### Personal Attributes:

The model suggests that two personal or agentic characteristics are linked to women's atypical occupational choice. The first is ambition (*Ambition*) or 'instrumentality'

(Fasinger, 1985), taken in the sense of striving for higher things, such as higher financial returns for work, and in aiming for higher status positions<sup>3</sup>. Lower levels of ambition in females have been found to correlate with traditional attitudes to family and career orientation, which are instrumental in typicality of career choice. The model proposes, therefore, that higher levels of ambition will correlate directly with a greater likelihood of atypical career choice, and that it will also lead to striving for higher levels of academic attainment, which in turn correlates with a greater chance of an atypical career.

The second agentic characteristic included in the model refers to a woman's attitude to life (*Lifview*) and their level of self-efficacy or locus of control - higher levels of self-efficacy, valuing independence, and a willingness to take a stand, have been found to contribute significantly to gender role attitudes in females who seek non-traditional career paths (see Rainey & Borders, 1997; Gustafson, 1992; Betz & Hackett, 1981, 1986; O'Brien & Fassinger, 1993). The model, therefore, proposes that a life-view indicating strong agentic characteristics will correlate with atypical career choice.

#### Play and leisure interests:

The type of play and leisure pursuits engaged in during childhood and adolescence has been found to predict the level of gender-typicality of occupational preferences (Fend, 1991; Schulenberg, Vondracek & Crouter, 1984; Eccles, 1994; Hackett, 1995). Consequently, the model proposes a positive relationship between females who report low levels of engagement in typical female childhood play (or who report having engaged frequently in female atypical, or gender-neutral childhood play activities) and atypical career choice (*Playatyp*). As the model posits a link between an orientation

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<sup>3</sup> It should be remembered, however, that 'high status' is a subjective and context-driven value and does not necessarily have to equate to occupations such as lawyer or doctor – a female aiming to become a specialised mechanic will require perhaps more ambition and determination to succeed than in the case of the aforementioned professions.



towards a traditional female career and lower levels of education and a lesser interest in Maths and Physics, the model also speculates that there will be a link between girls who do not engage in stereotypical female play (which emulates the traditional adult female role of motherhood and caring responsibilities) and higher school achievement, and a greater level of interest in Maths and Physics.

In terms of leisure interests, the model suggests that girls who report a high level of interest in technology, such as activities involving computers, or are 'thing' oriented (see Dunterman et al., 1978), such as showing a high level of interest in working with mechanical objects, such as cars and computers (*Compcar*), will be more likely to opt for non-stereotypical careers, to have higher levels of educational attainment and a greater interest in Maths and Physics.

Although not readily accepted as a leisure pursuit, children and adolescents are often given household tasks to do in their spare time. From the literature it would seem that girls are more likely than boys to be assigned routine household tasks and that these tasks are likely to involve routine caring for others (Grusec, et al, 1996). As it has been suggested that responsibility for such routine caring tasks may lead girls to develop interests and skills in caring per se, and as occupations utilising such skills and experience are female typical, the model proposes a relationship between a high level of involvement in routine household tasks and a higher chance of typical career choice (*Helphaus*).

#### Physical development:

Girls who enter puberty early are subjected to early gender intensification and have been found to have significantly higher homemaking orientation than their on-time or late maturing peers (Katz, 1986). A high homemaking commitment is known to correlate with a reduction in long-term career motivation and with less likelihood of a formal academic education (Gustafson, et al, 1992). The model, therefore, posits that

early maturing girls will have lower levels of education and, as lower levels of education correlate with higher likelihood of typical career choice, to be more prone to typical career choice than their on-time or late peers (*Pubtime*).

#### Educational level:

Educational level is very obviously related to career destination in that, for many occupations, (particularly the professions) precise levels of academic attainment are prerequisites for entry. The model proposes, however, that educational level (*Edlevel*) also plays a major role with regard to typicality of the occupation of choice: At the most basic level of argument, adolescents with low levels of attainment in school have less choice when trying to find a training or work placement and find themselves steered towards gender-typical occupations: Poorly qualified women in particular are more likely to be confined to poorly paid or routine jobs. Further, where women are seeking to enter occupations that traditionally or conceptually lie within the male domain (professional or non-professional) they may have to prove themselves to be better than male competitors (see Chapter 5) and to offer more in the way of human and cultural capital in order to overcome gender-stereotypical entry barriers.

#### Subject and course choice: Level of interest in Maths and Physics

One of the most frequent findings reported in the literature is the relationship between girls and Maths and Physics: They are less likely than boys to study these subjects at higher levels, and are more likely to report a lower interest in them, even where they are known to be gifted students in these areas and despite these subjects being crucial for many careers, for example, information technology, engineering, and economics (see in particular Eccles, 1994; Ziegler, Kuhn & Heller, 1998; Dauber & Benbow, 1990; Benbow 1988). The model proposes, therefore, that girls who express a preference for studying Maths and Physics at school (*Favsubj*) are more likely to choose atypical careers than those who do not.



### Sample information

Samples were drawn from two cross-sectional data bases, one established from data gathered immediately after reunification (in 1991) and the other from data gathered five years later in 1996. The 1991 data were gathered under the auspices of the Jugendstudie des Jugendwerks der Deutschen Shell (German Shell Corporation Youth Studies programme – see Chapter 2) and in 1996, through funding from the Deutsche Forschung Gemeinschaft (DFG - German Science Foundation), data were again gathered from across Germany using a slightly amended version of the 1991 research instrument. In both samples, the East was over represented in order to provide a large enough sub-sample for long-term research into this previously inaccessible area (see Masche and Reitzle, 1999, for sample descriptions, and Table 4:1 for an overview of the composition of both samples).

Year	Participants	East	West	Total
1991	Young adults 20-29 years	703	1471	2174
	Adolescents 13-19 years	582	1074	1656
total		1284	2539	3823
1996	Young adults 20-29 years	850	959	1809
	Adolescents 13-19 years	730	694	1424
total		1568	1645	3213

Table 4:1: Composition of the original 1991 and 1996 samples.

For this work, samples were drawn comprising females over 17 years of age who had reported either having entered a career or who were already in training with a fixed idea of their future career (see Table 4:2). The decision to include only those aged 17 and over was primarily because of the high number of girls below this age who had not reported any fixed idea for a career but also because by this age initial career-related decisions have already been made<sup>4</sup>. Equally important in the decision not to include

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<sup>4</sup> In the case of the GDR, first vocational decisions were usually made between the ages of 14.3 and 15.5 years (Silbereisen, Vondracek & Berg, 1997). In addition, in the West, by age 17, the majority of students

those younger than 17 was that it ensured all of the East sample in 1991, and most of the sample in 1996 (i.e., the 21-29 year olds) would have made their initial career choices during the time of the GDR (see previous footnote).

Year	Participants	East	West	Total
1991	Females 17-29	413	864	1277
1996	Females 17-29	501	543	1044
	Total	914	1407	2321

Table 4:2 Description of the samples used in the analyses for 1991 and 1996

## Measures

For the model, while some measures for the factors in the model could be drawn directly from the original instrument<sup>5</sup>, others had to be constructed. The variables generated (see Table 4:6 for an overview) were constructed identically for both the '91 and '96 models, and were tested for equality of variance, mean distribution, and standard deviation.

**Parents:** In order to measure home background, the construct *Parents* was calculated based on two measures from the data set. One measure concerned the level of mothers' and fathers' education (given separately) whereby respondents reported on a four point scale i.e., 1 = no formal educational qualification, 2 = Hauptschulabschluss (non-academic track final qualification), 3 = Realschulabschluss (technical track final qualification), 4 = Abitur (university entrance qualification). As this refers to the West German school system, for those parents educated under the school system of the GDR levels were coded to correspond thus: 1 = no formal educational qualification, 2 = 8th Class leaving certificate, 3 = 10th Class leaving certificate, 4 = Abitur. The scores for both parents were summed to give a scale from 1 to 8 so that, for example, in a household where both parents were educated to Abitur level, the score for parental

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have completed Hauptschule and Realschule (and so have made their first vocational decisions) and Gymnasium students have embarked on their selected courses for the Abitur.



education would be 8; in a household where one parent held a Realschulabschluss and the other a Hauptschulabschluss, the score would be 5.

The second measure used in the calculation of *Parents* was level of parents' vocational qualifications - again given separately for both parents, and according to the East and the West structure of vocational qualifications. Some items in the West, which indicated subsets within the same level of vocational qualification, were collapsed to provide a comparable East/West 6 point scale i.e., 1 = No professional vocational qualification; 2 = Berufsschulabschluss (Vocational College final qualification); 3 = Berufsfachschulabschluss (Specialist Vocational College final qualification); 4 = Meister, Qualified technician, or similar; 5 = Technical University qualification; 6 = University qualification. As for the measure of parental education, the scores for both parents were summed, giving a score range of 2 to 12. In a final step, the scores for parental education and vocational qualifications were combined to form the variable *Parents*. This resulted in a possible and actual score range from 4 to 20: Distribution for the '91 and '96 data was acceptably close to normal distribution.  $\alpha = .84$ ;  $m = 12.32$ ;  $SD = 5.61$  (1991);  $\alpha = .76$ ;  $m = 12.84$ ;  $SD = 3.07$  (1996)

***Parint:*** A battery of 15 items was included in the '91 and '96 instruments concerning family interaction and home environment (based on the work of Bourdieu (1997) concerning cultural capital theory). Respondents were asked to think back to the time when they were aged between 6 and 12 and to indicate the frequency with which they undertook various activities with their parents (4-point Likert scale: 1 = not at all to 4 = very often). After factor analysis, four items were selected, namely, time spent in making music together, joint involvement in sport, reading together, and sharing hobbies. Scores over these four items were summed, producing a range of 4 (low level

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<sup>5</sup> For the original instrument see Deutsch Shell 1992.

of activity) to 16 (high level of activity); actual range was 4 – 14 for both 1991 and 1996. Distribution was acceptably close to normal, although a negative skew was detected for both East and West in both years.  $\alpha = .67$ ;  $m = 7.6$ ;  $SD = 2.5$  (1991):  $\alpha = .66$ ;  $m = 8.0$ ;  $SD = 2.5$  (1996)

**Ambition**: To act as a measure of ambition, two items were drawn from a battery of six items that focussed on attitude to life<sup>6</sup>. Respondents were asked to select from a pair of statements which most suited their own view on life:

1. "I just want to enjoy life, I don't want to put myself out" or "I want to make something of my life, even when it means a struggle".
2. "I don't want to stand out from the crowd, I want to be like those around me" or "I want to be different from those around me".

The first statement from each pair scored 1 and the second scored 2. Individual scores were summed giving a scale of 2 (lower life aspirations) to 4 (higher life aspirations).  $m = 1.97$ ;  $SD = .71$ ;  $p < 0.01$  (1991):  $m = 1.91$ ;  $SD = .69$ ;  $p < 0.01$  (1996)

**Liferview**: A measure of self-efficacy and attitude to the future was calculated by summing the scores of items selected by factor analysis from a battery covering attitudes to life. Items were:

- a) "Today is today and tomorrow is tomorrow"; "I'll think about tomorrow when it happens"; "Don't think so much about things that might happen tomorrow"; "I avoid thinking about the future"; (Stanford Time Perspective Inventory, Gonzalez & Zimbardo, 1985): The scores of these items were reversed so that 1 = "The statement fits me very well" and 4 = "The statement doesn't fit me at all" giving a minimum score of 4 (no thoughts about the future) to 16 (consideration of the future).

$\alpha = .73$ ;  $m = 10.07$ ;  $SD = 2.54$  (1991):  $\alpha = .73$ ;  $m = 9.56$ ;  $SD = 2.46$  (1996)

- b) "Much in life is chance"; "My life is influenced more by chance than experience"; "One doesn't learn much just from one's own experiences"; "It's all the same to me

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<sup>6</sup> In the '91 instrument there is a single item which addresses the question of level of ambition directly: "How ambitious are you?" - scored on a 5-point Likert scale. However, this item is not included in the '96 instrument so could not be used for this comparative work. The constructed measure correlated



what the future brings" (Cavalli, 1988). Respondents answered against a 4-point Likert scale where 1 = "The statement doesn't fit me at all" to 4 = "The statement fits me very well". As for the other four items, scores were reversed so that those not associating with the statements received the higher scores. Scores across the items were combined giving a range of 4 (fatalistic concerning the future - external locus of control) to 16 (agentic approach to the future - internal locus of control).

$\alpha = .66$ ;  $m = 13.15$ ;  $SD = 1.97$  (1991);  $\alpha = .68$ ;  $m = 6.99$ ;  $SD = 2.07$  (1996)

The scores of a) and b) were summed to form the construct *Liferview* (correlation between a) and b)  $p < 0.01$  in 1991 and 1996). Possible score range was 8 (low value of and fatalistic approach to future planning) to 32 (high levels of consideration for and an agentic approach to the future). Actual range was 14 to 32, for both 1991 and 1996. Distribution for both the '91 and '96 data was normal or acceptably close to normal.

**Playatyp**: Presented with a battery of items related to childhood play interests, respondents were asked, "Think back to the time when you were aged between 3 and 12. What games from the following list did you play most often?" Based on cross-tabulation and factor analysis, the items shown in Table 4:3 were selected to serve as a measure of participation in atypical, gender-neutral, and typical play activities.

Female typical	Male typical	Gender neutral
Mothers and fathers	Cowboys and Indians	Reading books from which one learns something
Play kitchen	Cops and robbers	Visiting museums
Shops	War, playing soldiers	Going to the opera or theatre
Doctors and nurses	Playing with toy guns, trains etc	Trips out, sightseeing

Table 4:3: Play activities included in the analyses by gender classification

Scoring on female typical games was reversed so that high scores reflected those who never or seldom engaging in these activities. For these items, therefore, the scale was from 1 = very often to 4 = never. For games and activities categorised as male typical and gender neutral, the scores, 1 = never to 4 = very often, were held. The individual

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significantly with the original measure at the 0.01 level ( $r = .190$ ).

scores across all 12 items were summed, giving a possible range of 12 – 48; actual range was 13 – 35 in 1991 and 16 – 35 in 1996: High scores, therefore, indicate a preference for female-atypical and gender neutral games. Distribution was normal for the '91 sample but slightly skewed towards the lower scores for the West in 1996.

$\alpha = .62$ ;  $m = 26.19$ ;  $SD = 4.31$  (1991):  $\alpha = .64$ ;  $m = 26.24$ ;  $SD = 4.24$  (1996)

**Compcar**: Two items to act as a measure of interest in technical things and activities were selected from a battery concerning adolescent leisure activities<sup>7</sup>, namely, level of involvement with repairing and working with cars and/or bikes, and interest in and use of computers. Respondents answered against a 4-point Likert scale (1 = never to 4 = very often). Values across the two items were summed giving a possible range of 1 – 8; actual range for both regions and at both points of measurement was 2 – 7. Distribution was normal for both regions and both time points.  $m = 4.0$ ;  $SD = 1.40$ ;  $p < 0.05$  (1991):  $m = 4.27$ ;  $SD = 1.44$ ;  $p < 0.01$  (1996)

**Helphaus**: In the original research instrument, respondents were asked to report with what frequency they had undertaken various household tasks for their parents during the previous year. From the original battery of seven items, three routine female-typical household tasks, (washing and ironing, caring for a younger child, and cooking and cleaning) were selected. Scores were reversed so that 1 = regularly undertaken to 4 = never. (This was to maintain the direction of values in the other exogenous variables in the model.) Values were summed, resulting in a possible range of 3 to 12 (actual range, 4 to 12 in both '91 and '96). Distribution was skewed towards the higher values with around 50% of both the '91 and '96 samples reporting never or seldom being engaged in any of these activities.  $\alpha = .89$ ;  $m = 10.38$ ;  $SD = 3.9$  (1991):  $\alpha = .84$ ;  $m = 9.28$ ;  $SD = 2.18$  (1996)

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<sup>7</sup> In the 1991 instrument, respondents were asked directly about their interest in things technical (*fr/10*). As



**Pubtime:** From a battery of items concerning pubertal development respondents were asked, "How old were you when you had your first period?"<sup>8</sup> Scores were recorded as whole years. Range was 9 to 18 and distribution for the '91 and '96 data was acceptably close to normal.  $m = 12.99$ ;  $SD = 1.22$  (1991);  $m = 12.93$ ;  $SD = 1.22$  (1996)

**Edlevel:** Respondents were asked to give the level of final leaving examination or, in the case of Abiturienten ('A' level students) the one to which they were working. Scale was 1 = no completed education; 2 = lower-track, basic leaving certificate i.e., Hauptschulabschluss (FRG) or Abschluss 8 Klasse (GDR); 3 = middle or technical-track leaving certificate i.e., Realschulabschluss (FRG) or Abschluss 10 Klasse (GDR); 4 = university-track i.e., Abitur (FRG and GDR). Distribution across the two samples showed a positive skew towards the higher levels of education for the East: distribution for the West was normal.  $m = 3.15$ ;  $SD = .70$  (1991);  $m = 3.12$ ;  $SD = .70$  (1996)

**Favsubj:** Respondents were asked to indicate their most preferred subjects at school from a list of 24 subjects: More than one choice of subject was possible. In order to ascertain those with a high-ranking preference for Maths and/or Physics both subjects were given a value of 1 and all other subjects 0. In order to determine those with a high level of interest in these subjects, only the first 5 choices were considered. The scores across the variables holding the 5 individual subject scores were summed resulting in a scale of 0 = neither Maths nor Physics appearing in the first 5 choices of preferred subjects, 1 = either Maths or Physics being included, and 2 = both Maths and Physics being included. Distribution was highly negatively skewed across both the '91 and '96 samples: over 70% in both regions and in both samples chose neither Maths nor Physics as a preferred subject.  $m = .32$ ;  $SD = .53$  (1991);  $m = .28$ ;  $SD = .51$  (1996)

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this item was not included in the 1996 instrument it could not be used for comparative purposes. Relationship between the constructed variable *Compcar* and *fr16* was 0.219\*\*.

<sup>8</sup> In support of the retrospective self reporting – the onset of menstruation represents such an important event in women's lives they are usually able to recall the time exactly, many being able to describe the

*Typcarearea/we*: Data on the careers chosen by respondents had been given as a free response and then coded by the data collection institute according to the German national occupational classification code (equivalent to 3-digit level). In order to calculate the dependent variable, the percentage of women in each occupational area was calculated using aggregate data (Mikrozensus) for 1991 and 1997<sup>9</sup>. The percentage value corresponding to the chosen career of each respondent was used as the dependent variable value for each case. To allow for regional variability, the dependent variable was calculated separately for each region (labelled *Typcarearea* and *Typcarwe*, for the East and West respectively) the percentage concentration for each occupational area being calculated according to the labour market situation in the East and the West, in 1991 and 1996. For example, the percentage of women in 1991 working as documentalist (occupational code 82) was 50% in the West and 70% in the East. Thus respondents reporting a career in this occupational category in 1991 in the West sample would be assigned the value 50 in the dependent variable, *Typcarwe*, whilst those choosing the same occupation in the East would be assigned the value 70 in the dependent variable, *Typcarearea*. In 1996, the percentage of women working as documentalists had changed to 54% in the West and 67% in the East – so that respondents choosing this career in the West or the East would be assigned the values 54 and 67 respectively. As the values represent the percentage of women in each occupation, the possible range is 0 to 100 and, as would be expected, distribution is positively skewed for both regions in both samples.

*Typcarearea* (East)  $m = 67.29$ ;  $SD = 24.39$  (1991);  $m = 62.62$ ;  $SD = 24.68$  (1996)  
*Typcarwe* (West)  $m = 59.21$ ;  $SD = 21.65$  (1991);  $m = 52.71$ ;  $SD = 23.85$  (1996)

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surroundings to the event in great detail (Golub and Catalano, 1983).

<sup>9</sup> No Mikrozensus data was available for 1996, and as the 1997 data was calculated in February of that



## Correlations and descriptives

<u>Correlations for West 91 above the diagonal</u>											
	Typicality of career	Edlevel	Favsubj	Parents	Parint	ion	Ambit Lifeview	Play atyp	Comp car	Help haus	Pub time
Typicality of career		<b>-0.32</b>	<b>-0.13</b>	<b>-0.32</b>	<b>-0.11</b>	<b>-0.02</b>	<b>-0.11</b>	<b>-0.18</b>	<b>-0.07</b>	<b>0.08</b>	<b>0.04</b>
Edlevel	<b>-0.26</b>		<b>0.05</b>	<b>0.45</b>	<b>0.17</b>	<b>-0.01</b>	<b>0.18</b>	<b>0.23</b>	<b>0.16</b>	<b>-0.07</b>	<b>-0.02</b>
Favsubj	<b>-0.10</b>	<b>0.06</b>		<b>-0.01</b>	<b>0.03</b>	<b>0.03</b>	<b>0.02</b>	<b>0.12</b>	<b>0.17</b>	<b>-0.08</b>	<b>-0.02</b>
Parents	<b>-0.04</b>	<b>0.43</b>	<b>-0.08</b>		<b>0.27</b>	<b>-0.01</b>	<b>0.09</b>	<b>0.22</b>	<b>0.11</b>	<b>-0.02</b>	<b>-0.01</b>
Parint	<b>-0.02</b>	<b>0.25</b>	<b>-0.04</b>	<b>0.32</b>		<b>-0.05</b>	<b>0.03</b>	<b>0.19</b>	<b>0.06</b>	<b>-0.07</b>	<b>0.08</b>
Ambition	<b>-0.05</b>	<b>0.04</b>	<b>-0.03</b>	<b>0.01</b>	<b>0.12</b>		<b>0.12</b>	<b>0.01</b>	<b>0.03</b>	<b>-0.01</b>	<b>0.03</b>
Lifeview	<b>-0.05</b>	<b>0.18</b>	<b>-0.03</b>	<b>0.08</b>	<b>0.00</b>	<b>0.11</b>		<b>0.05</b>	<b>0.05</b>	<b>-0.05</b>	<b>-0.01</b>
Playatyp	<b>-0.10</b>	<b>0.22</b>	<b>0.01</b>	<b>0.14</b>	<b>0.17</b>	<b>0.03</b>	<b>-0.10</b>		<b>0.09</b>	<b>-0.07</b>	<b>0.06</b>
Comp car	<b>-0.01</b>	<b>0.05</b>	<b>0.08</b>	<b>0.00</b>	<b>0.08</b>	<b>0.03</b>	<b>-0.07</b>	<b>0.05</b>		<b>-0.14</b>	<b>0.01</b>
Help haus	<b>0.15</b>	<b>-0.05</b>	<b>-0.05</b>	<b>-0.01</b>	<b>-0.06</b>	<b>0.08</b>	<b>-0.07</b>	<b>0.02</b>	<b>-0.09</b>		<b>0.05</b>
Pubtime	<b>-0.07</b>	<b>-0.11</b>	<b>-0.05</b>	<b>0.02</b>	<b>0.00</b>	<b>0.01</b>	<b>-0.07</b>	<b>0.03</b>	<b>0.08</b>	<b>-0.04</b>	
<u>Correlations for East 91 below the diagonal</u>											

Key: see Table 4:5

Table 4:4 Correlations for East and West, 1991

<u>Correlations for West 96 above the diagonal</u>											
	Typicality of career	Edlevel	Favsubj	Parents	Parint	ion	Ambit Lifeview	Playatyp	Comp car	Help haus	Pubtime
Typicality of career		<b>-0.20</b>	<b>-0.11</b>	<b>-0.17</b>	<b>-0.12</b>	<b>0.07</b>	<b>0.03</b>	<b>-0.16</b>	<b>-0.09</b>	<b>-0.02</b>	<b>-0.04</b>
Edlevel	<b>0.00</b>		<b>0.08</b>	<b>0.42</b>	<b>0.24</b>	<b>0.00</b>	<b>0.12</b>	<b>0.23</b>	<b>0.31</b>	<b>-0.03</b>	<b>0.05</b>
Favsubj	<b>-0.08</b>	<b>0.15</b>		<b>0.04</b>	<b>0.04</b>	<b>-0.10</b>	<b>-0.03</b>	<b>0.13</b>	<b>0.17</b>	<b>-0.04</b>	<b>-0.05</b>
Parents	<b>0.08</b>	<b>0.26</b>	<b>0.03</b>		<b>0.45</b>	<b>0.03</b>	<b>0.12</b>	<b>0.23</b>	<b>0.22</b>	<b>-0.11</b>	<b>0.00</b>
Parint	<b>0.12</b>	<b>0.14</b>	<b>0.02</b>	<b>0.30</b>		<b>0.03</b>	<b>0.04</b>	<b>0.24</b>	<b>0.25</b>	<b>-0.12</b>	<b>0.03</b>
Ambition	<b>0.02</b>	<b>0.11</b>	<b>0.04</b>	<b>0.05</b>	<b>0.15</b>		<b>0.19</b>	<b>0.03</b>	<b>0.05</b>	<b>-0.01</b>	<b>-0.01</b>
Lifeview	<b>0.08</b>	<b>0.17</b>	<b>0.11</b>	<b>0.13</b>	<b>0.12</b>	<b>0.26</b>		<b>-0.08</b>	<b>0.04</b>	<b>-0.02</b>	<b>-0.03</b>
Playatyp	<b>-0.11</b>	<b>0.06</b>	<b>0.08</b>	<b>0.13</b>	<b>0.16</b>	<b>0.08</b>	<b>0.01</b>		<b>0.34</b>	<b>0.03</b>	<b>-0.03</b>
Comp car	<b>0.00</b>	<b>0.20</b>	<b>0.17</b>	<b>0.15</b>	<b>0.21</b>	<b>0.12</b>	<b>0.09</b>	<b>0.09</b>		<b>-0.03</b>	<b>0.00</b>
Help haus	<b>-0.04</b>	<b>-0.07</b>	<b>-0.02</b>	<b>-0.12</b>	<b>-0.07</b>	<b>-0.05</b>	<b>0.01</b>	<b>0.03</b>	<b>-0.07</b>		<b>0.03</b>
Pubtime	<b>0.04</b>	<b>-0.13</b>	<b>0.03</b>	<b>-0.12</b>	<b>-0.03</b>	<b>-0.01</b>	<b>0.07</b>	<b>-0.07</b>	<b>0.01</b>	<b>0.06</b>	
<u>Correlations for East 96 below the diagonal</u>											

Key: Bold only = Significant at the  $p < 0.01$  level  
 Bold Italics = Significant at the  $p < 0.05$  level

Table 4:5 Correlations for East and West, 1996

Correlations among all variables used in testing the model for 1991 and 1996 are shown in Tables 4:4 and 4:5. Variables were also tested for equality of variance and equality of

year, it was considered more acceptable to use than data for 1995.

mean. In the comparison between regional groups (East/West) for 1991, after correcting significance using Bronferroni's correction procedure, two significant differences in equality of variance were found, namely *Helphaus* ( $F = 4.57, p < 0.05$ ) and *Edlevel* ( $F = 64.29, p < 0.01$ ): Three variables had significantly unequal means, namely *Parents* ( $t = -13.38, p < 0.001$ ), *Helphaus* ( $t = 6.78, p < 0.01$ ), *Edlevel*, ( $t = -4.70, p < 0.01$ ). In 1996, significant differences were found for equality of variance for three variables, namely, *Parents* ( $F = 41.28, p < 0.001$ ), *Parint* ( $F = 9.45, p < 0.01$ ) and *Edlevel* ( $F = 57.28, p < 0.001$ ): One variable showed a significant difference in equality of means, namely, *Parents* ( $t = -7.81, p < 0.001$ ).

### Data Analysis

The hypothetical model was tested using the structural equation modelling software package, AMOS (Arbuckle & Wothke, 1999). Maximum likelihood estimates of the model coefficients were obtained for the two regions East/West, in 1991 and 1996. The fit of the model with the observed variables can be estimated by using various goodness-of-fit measures. In this study the following measures were used: chi square ( $\chi^2$ ), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI) and Tucker Lewis Index (TLI). In order to assume a good fit between the hypothetical and the empirical model, values returned for the measures should be within the following ranges:

- $\chi^2$  – the bigger the chi-square statistic, the stronger the evidence against the null hypothesis.
- RMSEA – “We are also of the opinion that a value of about 0.08 or less for the RMSEA would indicate a reasonable error of approximation and would not want to employ a model with a RMSEA greater than 0.1.” (Brown and Cudeck, 1993, cited in Arbuckle and Wothke, 1999, p403).



- GFI – is always between zero (0) and unity (1), where unity indicates a perfect fit (Arbuckle and Wothke, 1999, p412).
- AGFI – is not bounded by zero but one equals a perfect fit.
- TLI – the normal range is between zero and one, but these are not fixed boundaries: values close to one indicate a very good fit.

Variable name	Area covered
<i>Typcare</i> / <i>Typcarwe</i>	Typicality of chosen career indicated by percentage of women in the chosen carer in the East/West labour markets respectively
<i>Edlevel</i>	Level of education achieved or expected
<i>Favsubj</i>	Level of preference in Maths and/or Physics at school
<i>Parents</i>	Level of joint parental education and job status - parental SES
<i>Parint</i>	Level of parental investment, level of joint daughter/parent leisure activities
<i>Ambition</i>	Level of ambition
<i>Lifview</i>	Level of self-efficacy and planfulness
<i>Playatyp</i>	Typicality of childhood play activities
<i>Compcar</i>	Level of interest in technical things
<i>Helphaus</i>	Level of participation in routine, female-typical household tasks
<i>Pubtime</i>	Age at onset of menarche

Table 4:6 Overview of variables used in the causal model

## Results

The results of confronting the model with the various data sets will be reported first without any attempt at interpretation. A full discussion of the findings, together with attempts at interpreting the results in light of the research question will follow this section.

East 1991 (See Diagrams 4:1 & 4:2) The fit between the model and the East data is good ( $\chi^2 = 10.57$ ;  $p = .48$ ; GFI = 1.00; AGFI = .97; TLI = 1.01; RMSEA = .00) but nevertheless explains just 11% of the dependent variable. The factors expected to predict level of education explain 26% of its variance, but only 1% of interest in Maths and Physics are explained by the factors suggested in the model. Of the factors predicted as having a direct relationship with typicality of career choice (*Typcare*) the most significant is found with *Edlevel* ( $\beta = -.30$ ,  $p < 0.001$ ) indicating that women with higher levels of education are more likely to make atypical career choices. The relationship between frequency of involvement in female-typical household tasks (*Helphaus*) and typicality of career choice is also found to be significant ( $\beta = .14$ ,  $p < 0.01$ ). However, against expectations, the direction of the relationship suggests that females scoring highly on lower levels of involvement in typical domestic activities at home have an affinity with more female-typical career choice, and not with atypical, as proposed. A significant relationship is also found between pubertal timing (*Pubtime*) and typicality of career choice ( $\beta = -.10$ ,  $p < 0.05$ ) indicating a relationship between girls who are early in first menarche and female-typical career choice. Other variables predicted as correlating directly with typicality of career choice show no significance.

Of the factors predicted as having an indirect relationship with typicality of career choice via the mediating variable *Edlevel*, the most significant relationship is found with level of parental SES (*Parents*;  $\beta = .37$ ;  $p < 0.001$ ). *Lifview* is also significant at the 0.001 level, indicating a relationship between higher levels of self-efficacy and



planfulness ( $\beta = .16$ ,  $p < 0.001$ ) and higher educational level. Significance is also found for the path between lower levels of engagement in typical childhood play activities ( $\beta = .17$ ,  $p < 0.001$ ) and higher educational level. The relationship between pubertal timing and educational level is significant at the 0.01 level ( $\beta = -.12$ ) but again the direction of the association is not as predicted. Instead of a link being found between early pubertal timing and lower levels of education, the findings suggest a link between early pubertal timing and higher levels of education. Significance is also found for the proposed relationships between parental interest and educational level ( $\beta = .09$ ,  $p < 0.05$ ), suggesting a relationship between females reporting higher levels of joint parental activities, such as reading and making music together, and higher levels of education. As educational level itself has a significant relationship with the dependent variable, an indirect relationship can be assumed for those factors having a significant relationship with *Edlevel*.

West 1991 (See Diagrams 4:3 & 4:4) When the model is confronted with the West '91 data, the fit of the model is good ( $\chi^2 = 13.22$ ;  $p = .28$ , GFI = 1.00, AGFI = .98, TLI = .98, RMSEA = .02). The power of the model to predict the dependent variable is 17%, and of the variables related to the two mediating variables, *Edlevel* and *Favsubj*, 26% and 4% respectively. Both mediating variables are found to have a highly significant relationship with the dependent variable, *Typcarwe* indicating a relationship between higher levels of education (*Edlevel*,  $\beta = -.19$ ,  $p < 0.001$ ), and higher levels of interest in Maths and Physics (*Favsubj*,  $\beta = -.11$ ;  $p < 0.001$ ) and choice of occupation with low concentrations of women. From the other factors expected to predict typicality of career choice, a significant relationship is also found between higher levels of parental SES (*Parents*,  $\beta = -.22$ ,  $p < 0.001$ ) and typicality of childhood play (*Playatyp*,  $\beta = -.08$ ;  $p < 0.05$ ).

With regard to factors having an indirect impact on the dependent variable via

the mediating variable *Edlevel*, in the West in '91 the strongest relationship is found between *Parents* and *Edlevel* ( $\beta=.40$ ,  $p<0.001$ ) indicating a highly significant link between level of parental SES and daughter's own educational level. Other factors found to have a significant relationship with level of education (*Edlevel*) are, *Lifview* ( $\beta= .14$ ,  $p<0.001$ ), *Playatyp* ( $\beta= .12$ ,  $p<0.001$ ) and *Compcar* ( $\beta=.10$ ,  $p<0.001$ ). As there is a significant path between *Edlevel* and *Typcarwe*, an indirect relationship with the dependent variable can be assumed for these variables. Factors found to have a significant relationship to the mediating variable, *Favsubj* are *Playatyp* ( $\beta = .12$ ,  $p<0.001$ ) and *Compcar* ( $\beta = .16$ ,  $p<0.001$ ) and again, as there is a significant relationship between *Favsubj* and *Typcarwe*, an indirect relationship with the dependent variable can be assumed for these factors.

East 1996 (See Diagrams 4:5 & 4:6) When the model is confronted with the data for the East in 1996, all measures report an acceptable but weak fit ( $\chi^2 = 19,38$ ;  $p = .07$ ; GFI = .99; AGFI = .96; TLI = .85; RMSEA = .04). However, the model only explains 5% of the variance in typicality of career choice, and just 3% in the mediating variable, *Favsubj*. In addition, the power of the model to predict educational level is much weaker than was seen in 1991, and now only explains 13% of its variance.

Just two factors are found to have a significant relationship with the dependent variable: level of joint leisure activities with parents (*Parint*;  $\beta = .11$ ,  $p<0.01$ ) and typicality of childhood play activities (*Playatyp*;  $\beta = -.12$ ,  $p<0.05$ ). Of these, the relationship between parental investment and typicality of career choice is not in the expected direction and suggests that higher levels of joint activities with parents, such as making music or playing sport together, correlate with typical career choice, and not with atypical, as predicted. In particular, it should be noted that neither of the mediating variables, *Edlevel* or *Favsubj*, are found to have a significant relationship with the dependent variable (although *Favsubj* is approaching significance at  $\beta = -.08$ ,  $p = 0.1$ ).



Of the factors correlating with educational level (*Edlevel*) in the East in 1996, level of parental SES (*Parents*;  $\beta = .19$ ) and attitude to life (*Lifview*;  $\beta = .13$ ) are both significant at the 0.001 level. *Compcar* ( $\beta = .15$ ) and *Pubtime* ( $\beta = -.12$ ) are also significant at the 0.01 level. Again, however, it has to be noted that the direction of the relationship between pubertal timing and educational level is not as predicted. As was seen in 1991, it suggests that early pubertal timing is related to higher rather than lower levels of education. Of the factors predicted to have a significant relation with the mediating variable, *Favsubj*, only an interest in technical things (*Compcar*,  $\beta = .17$ ,  $p < 0.001$ ) achieves significance.

West 1996 (See Diagrams 4:7 & 4:8) A good fit is found when the model is confronted with data for the West in 1996 ( $\chi^2 = 11.24$ ;  $p = .42$ ; GFI = 1.00; AGFI = .98; TLI = 1.00; RMSEA = .01). However, the power of the model to predict the dependent variable, *Typcarwe*, is very low, indicating that in 1996, the model only explains 8% of the variance in the typicality of women's career choice. However, 25% of variance in educational level is explained, but, as in the other models, that of *Favsubj* (4%) is very low.

Fewer factors predicted as having a direct relationship to the dependent variable achieve significance in 1996 than in 1991- i.e., *Edlevel* ( $\beta = -.14$ ;  $p < 0.01$ ), *Favsubj* ( $\beta = -.08$ ;  $p < 0.05$ ), *Parents* ( $\beta = -.09$ ,  $p < 0.05$ ) and *Playatyp* ( $\beta = -.10$ ,  $p < 0.05$ ). Of the factors predicted as having an indirect relationship with typicality of career choice via the mediating variable *Edlevel*, parental SES (*Parents*) is highly significant ( $\beta = .34$ ,  $p < 0.001$ ), as is *Compcar* ( $\beta = .20$ ,  $p < 0.001$ ). A less significant relationship with *Edlevel* is found for *Lifview* ( $\beta = .09$ ,  $p < 0.05$ ) and *Playatyp* ( $\beta = .10$ ,  $p < 0.05$ ). With regard to factors and their relationship to the mediating variable, *Favsubj*, only *Compcar* ( $\beta = .15$ ,  $p < 0.001$ ) achieves significance.

East '91

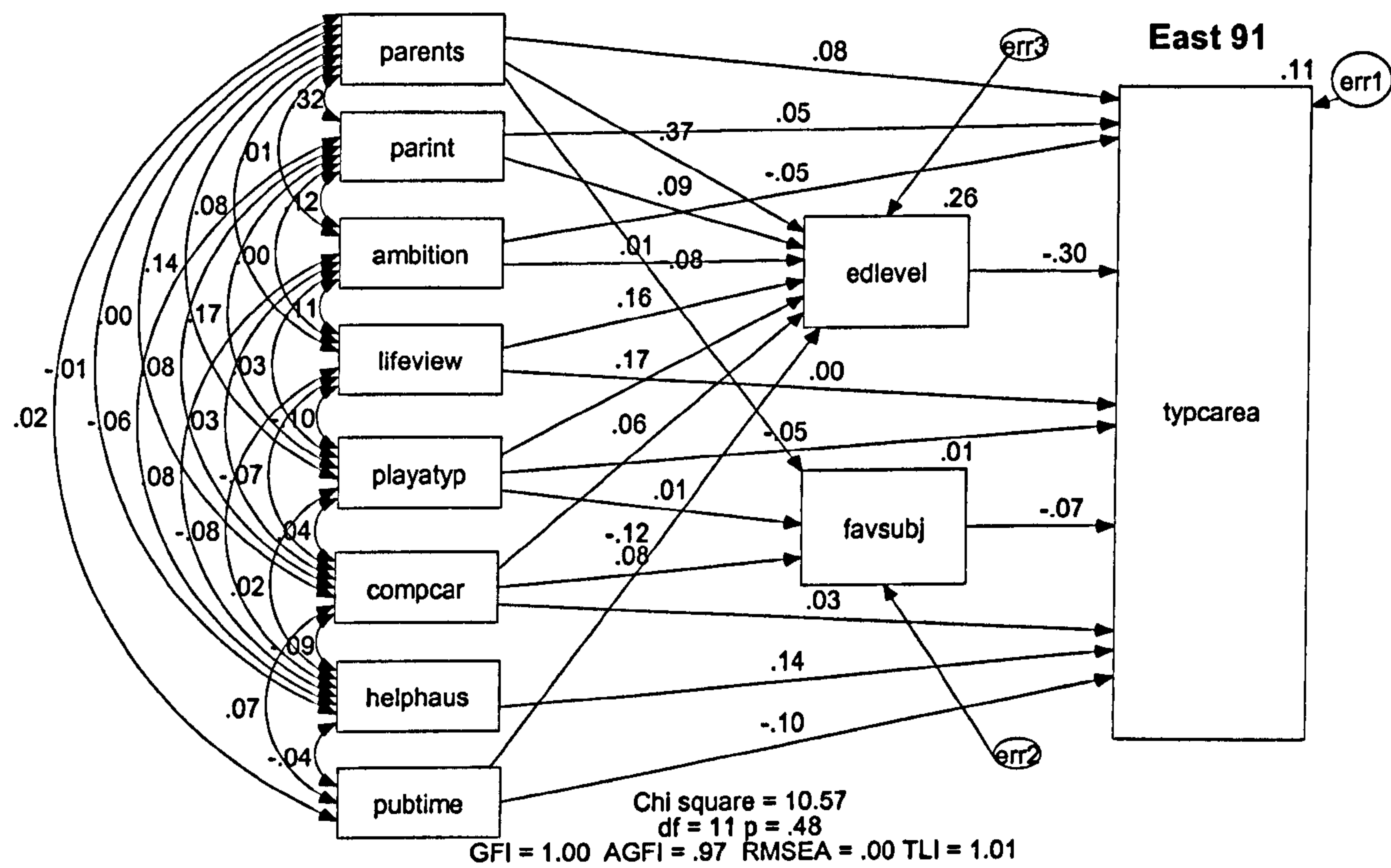


Diagram 4:1 Causal model of atypical career choice: East '91: Full model

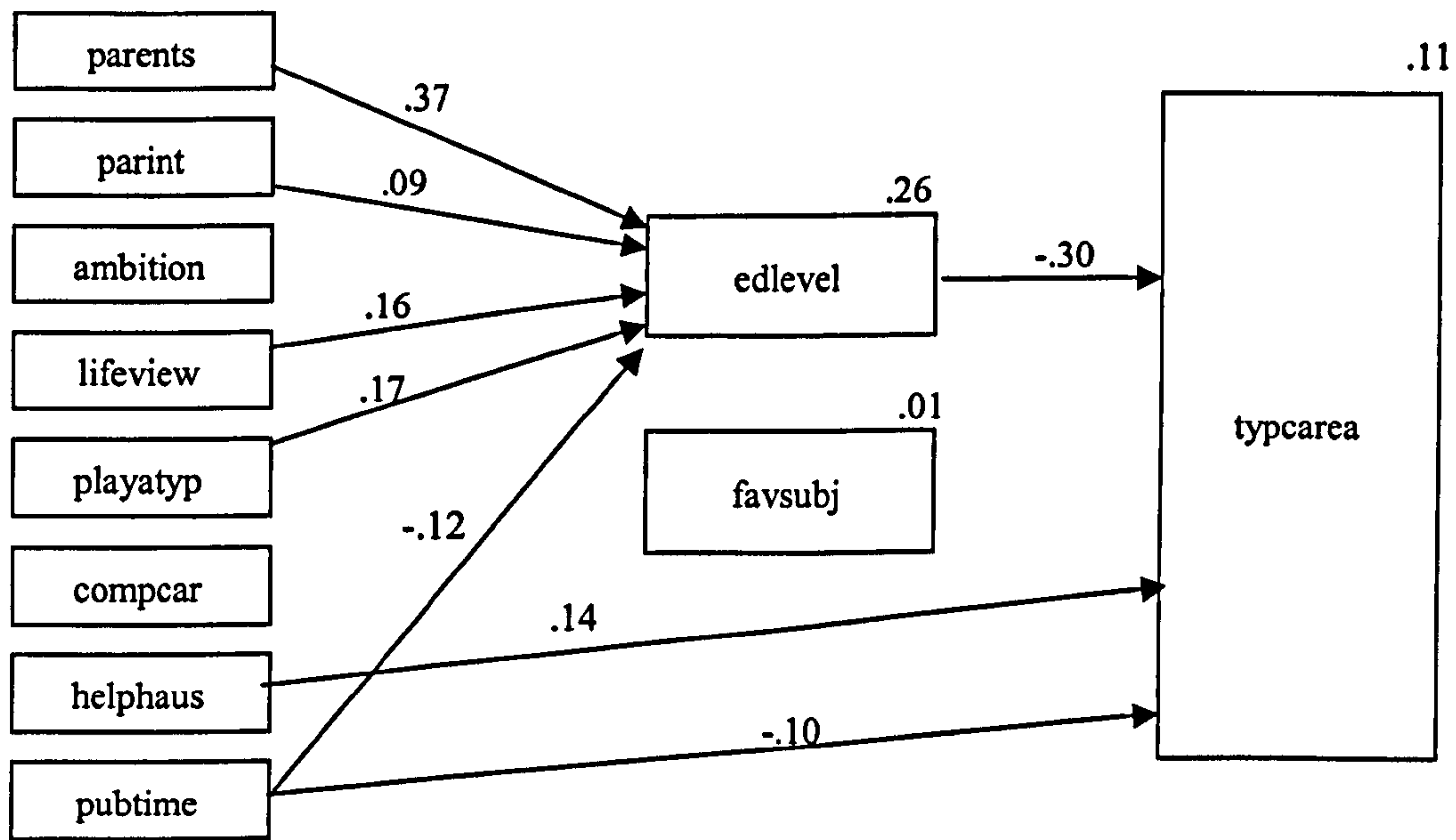


Diagram 4:2 Causal model of atypical career choice: East '91: Paths significant above 0.05 level



West '91

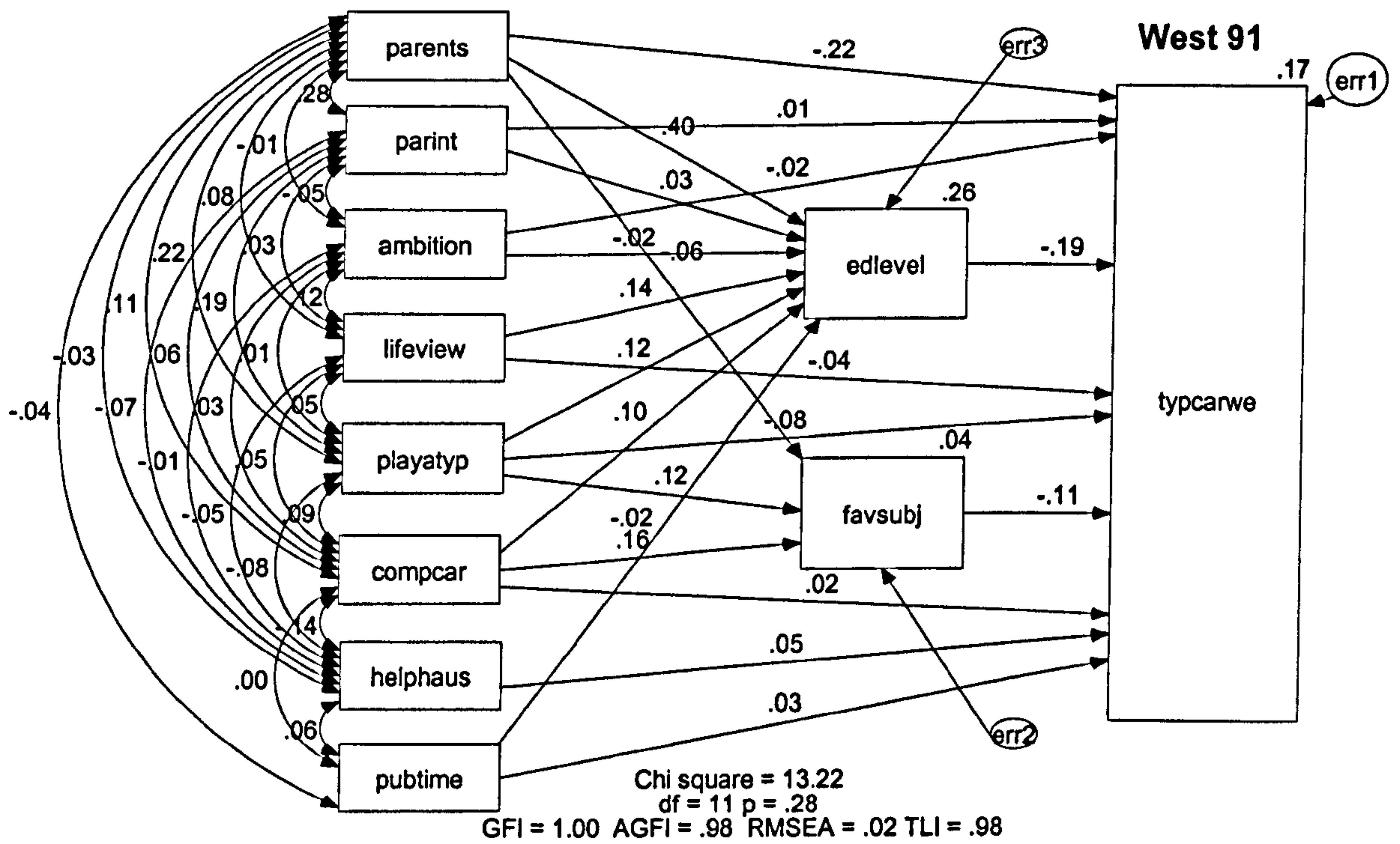


Diagram 4:3 Causal model of atypical career choice: West '91: Full model

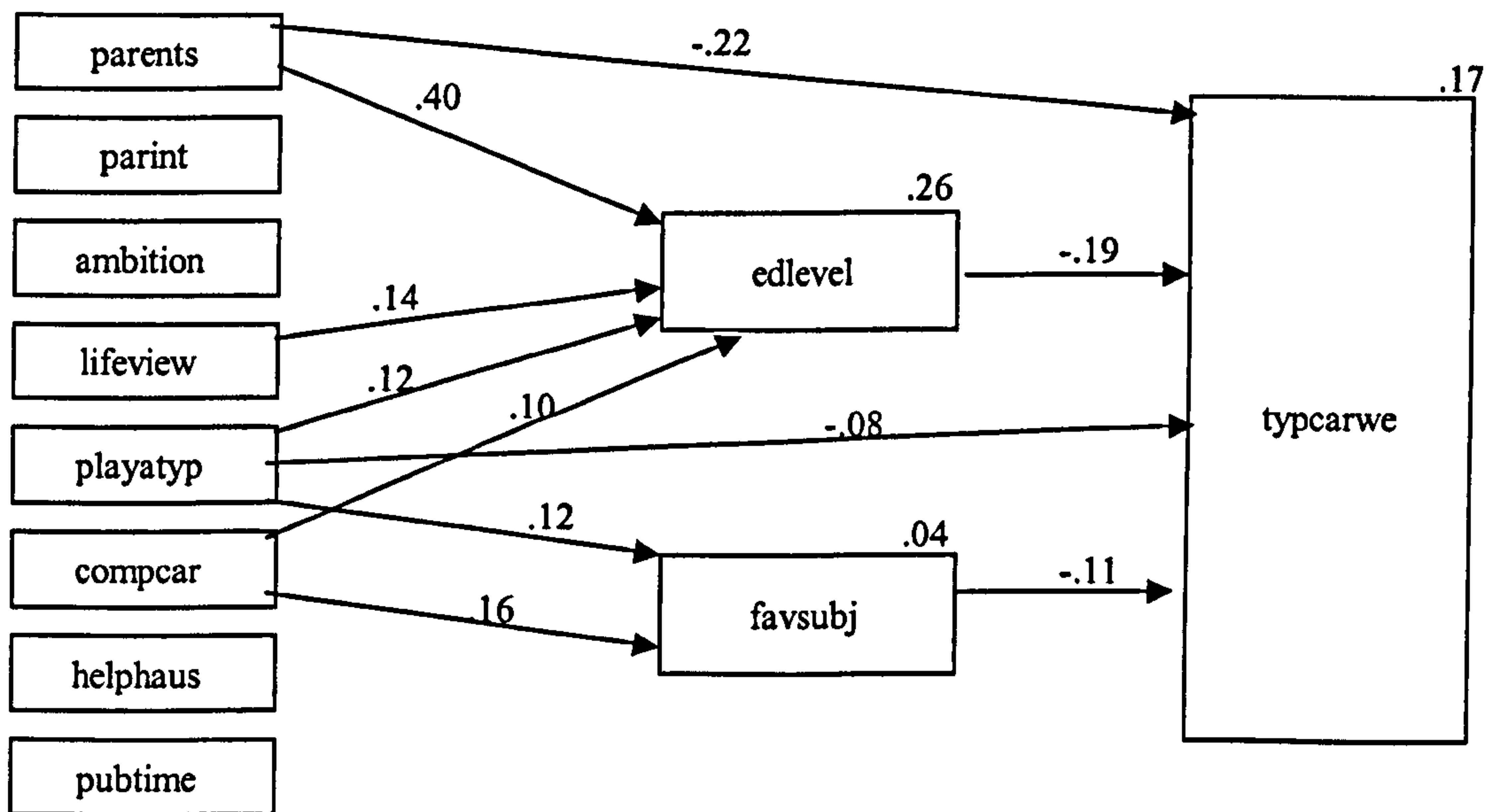


Diagram 4:4 Causal model of atypical career choice: West '91: Paths significant above 0.05 level

East '96

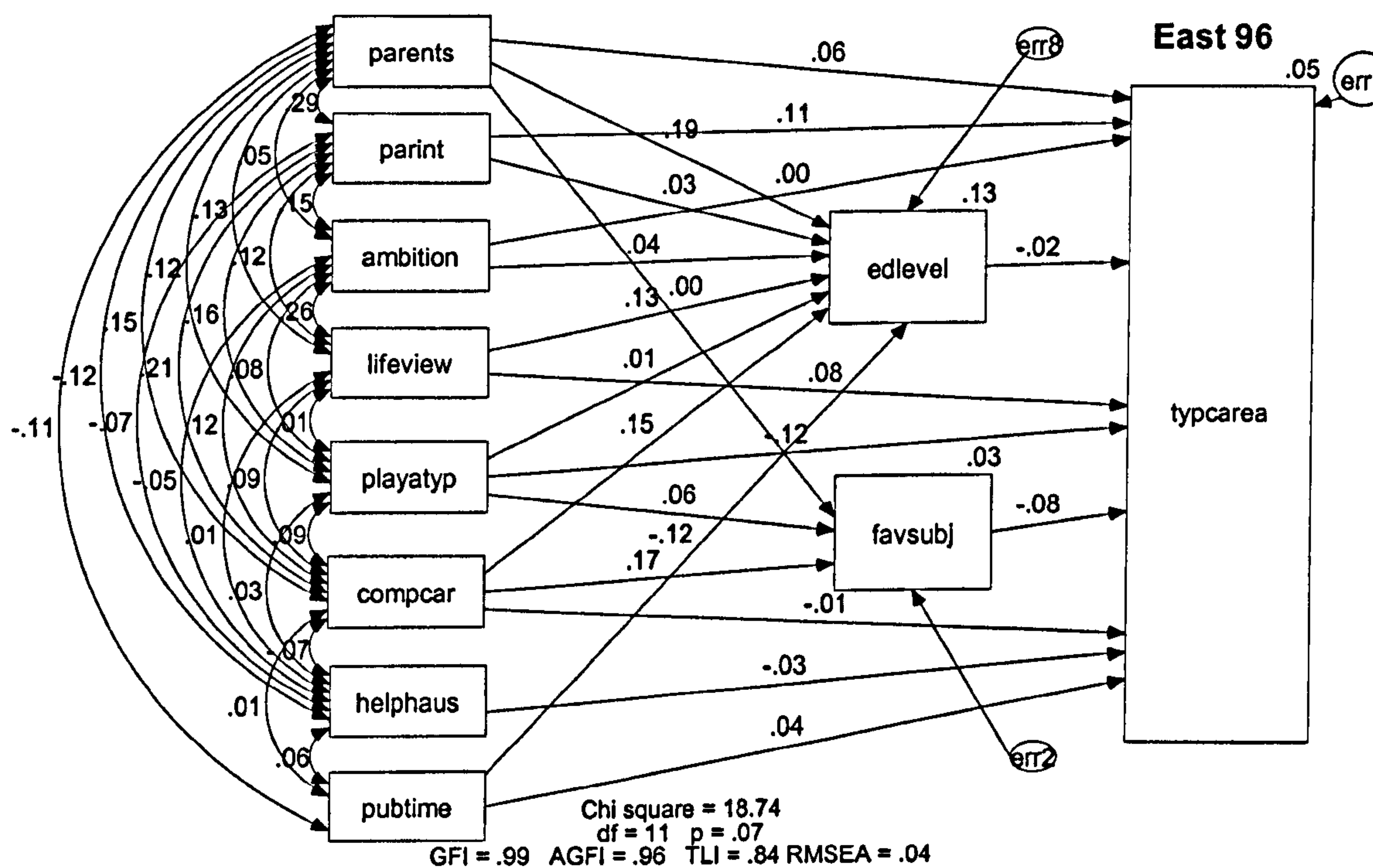


Diagram 4:5 Causal model of atypical career choice: East '96: Full model

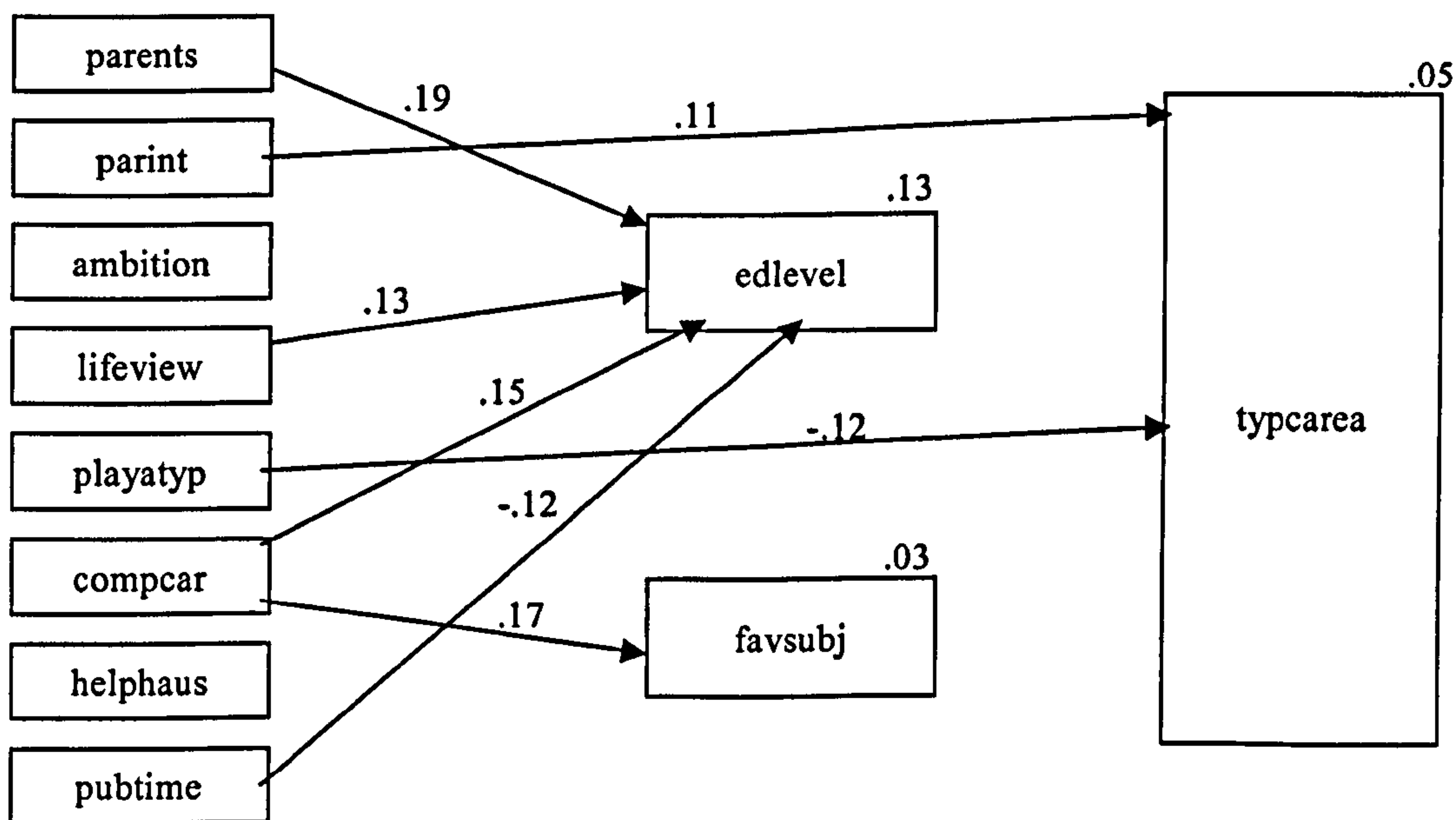


Diagram 4:6 Causal model of atypical career choice: East '96: Paths significant above 0.05 level



West '96

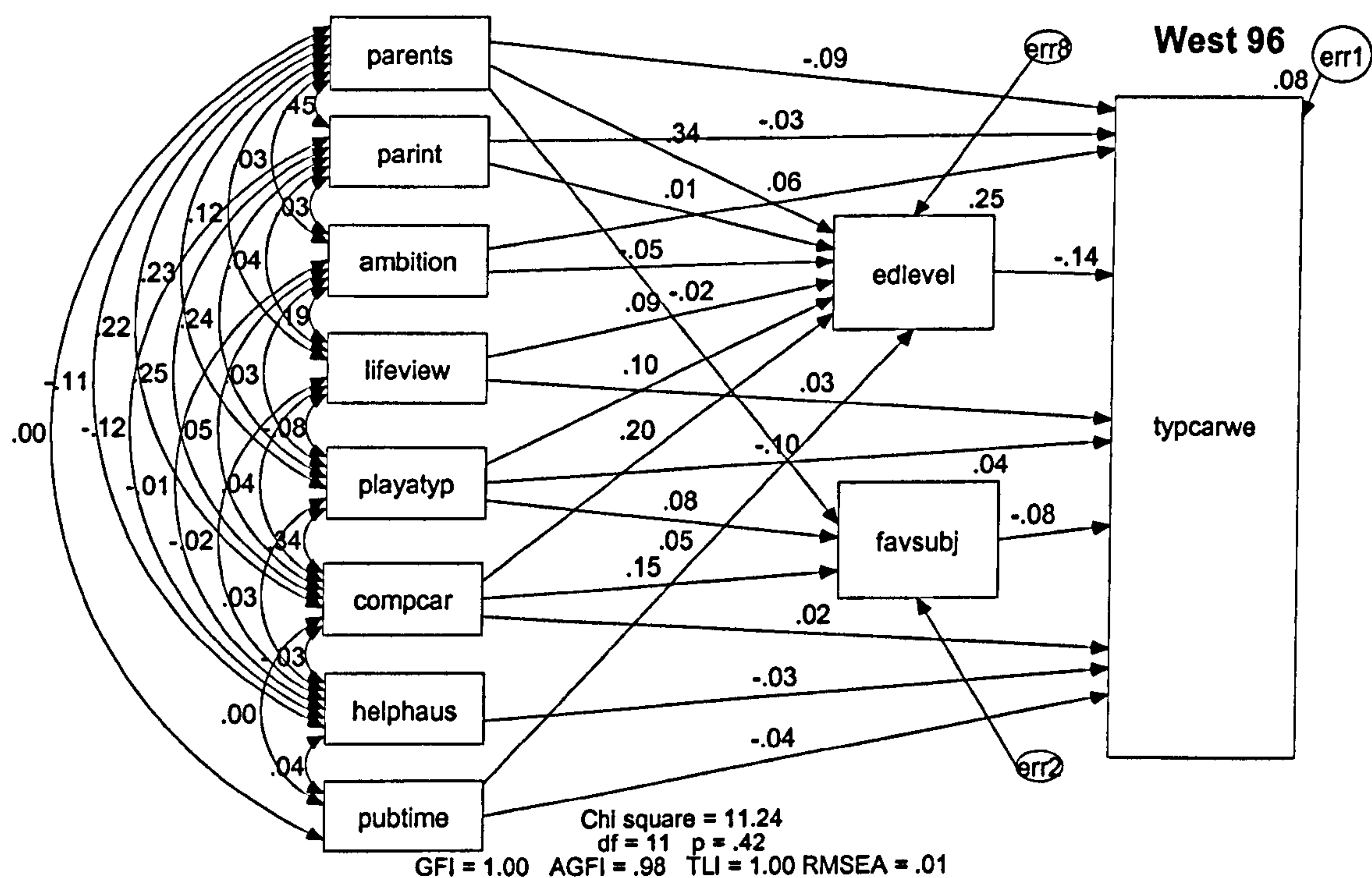


Diagram 4:7 Causal model of atypical career choice: West '96: Full model

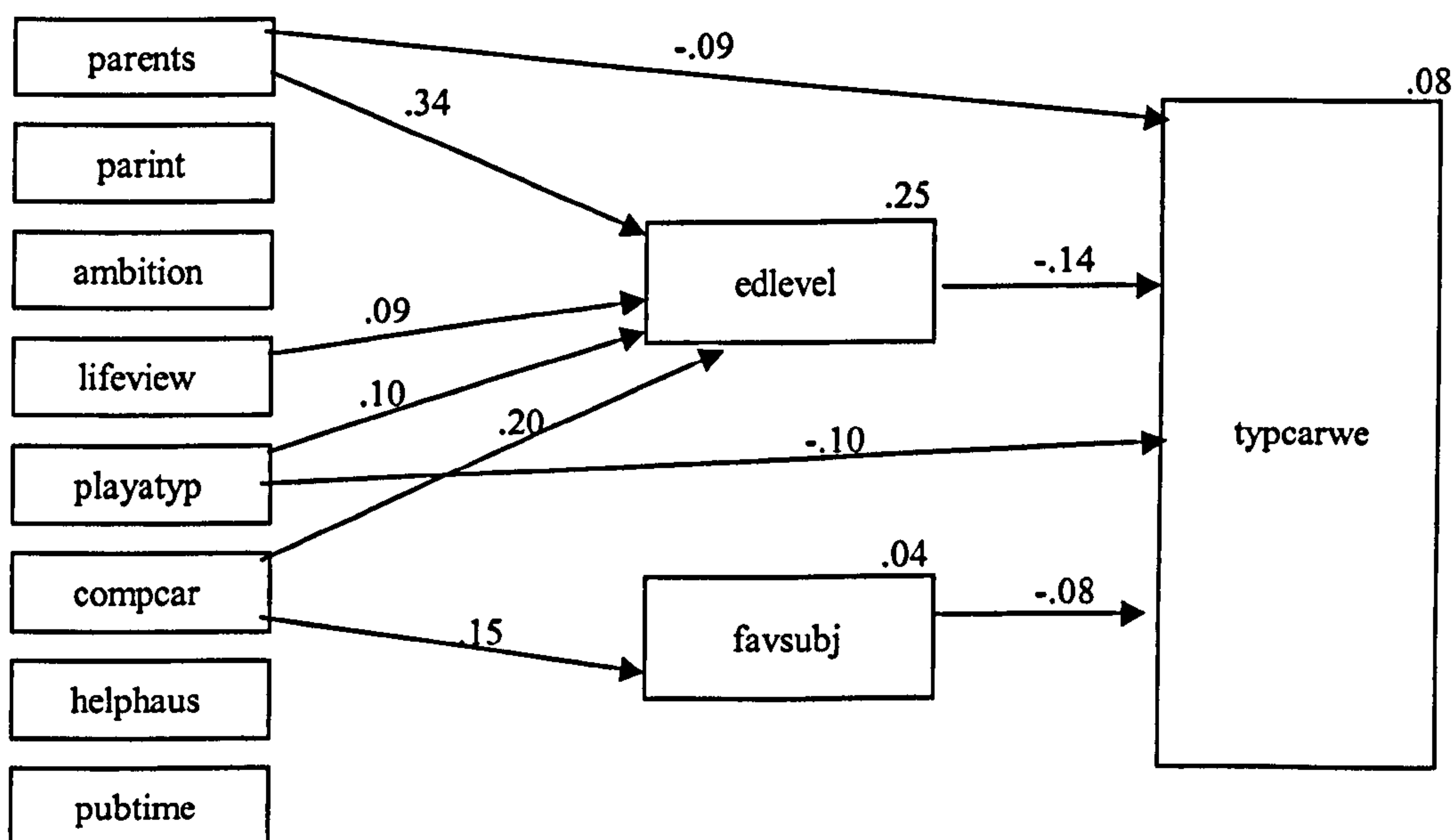


Diagram 4:8 Causal model of atypical career choice: West '96: Paths significant above 0.05 level

### Discussion of individual factors

When comparing the results of confronting the model with the data for East and West Germany in 1991 and 1996, it is clear that, as hypothesised, all factors (with the exception of ambition) play a significant role in the level of typicality of women's career choice, but that the strength of the relationships and their ranking in importance varies by context. A summary of the paths and their significances from each of the four models is presented in Table 4:7.

Factor Paths	West 91	West 96	East 91	East 96
Parental SES → Career typicality	***	*	ns	ns
Parental investment → Career typicality	ns	ns	ns	(*)
Ambition → Career typicality	ns	ns	ns	ns
Lifview → Career typicality	ns	ns	ns	ns
Typicality of play → Career typicality	*	*	ns	**
Technical interest → Career typicality	ns	ns	ns	ns
Helping at home → Career typicality	ns	ns	**	ns
Pubertal timing → Career typicality	ns	ns	*	ns
Educational level → Career typicality	***	**	***	ns
Preference for Maths and Physics → Career typicality	***	*	ns	ns
Parental SES → Educational level	***	***	***	***
Parental investment → Educational level	ns	ns	*	ns
Ambition → Educational level	ns	ns	ns	ns
Lifview → Educational level	***	*	***	**
Typicality of play → Educational level	***	*	***	ns
Technical interest → Educational level	***	***	ns	**
Pubertal timing → Educational level	ns	ns	(**)	(**)
Parental SES → Preference for Maths and Physics	ns	ns	ns	ns
Typicality of play → Preference for Maths and Physics	***	ns	ns	ns
Technical interest → Preference for Maths and Physics	***	***	ns	***

(\*) = relationship in opposite direction to that predicted

\*\*\* = significant at the 0.001 level; \*\* = significant at the 0.01 level; \* = significant at the 0.05 level

Table 4:7: Significance levels of factor paths by region and time

### Home Background

The influence of home background was expected to be operationalised in a girl's life via two main factors: level of parental SES and level of parental investment in their daughter's upbringing. Specifically, higher levels of parental SES and investment were posited as correlating with daughters choice of an occupation with lower concentrations



of women, with higher levels of educational attainment, and with higher levels of interest in Maths and Physics at school. Results from the four models show that parental SES is functional in predicting the typicality of their daughter's career choice either directly (only in the case of the West) or indirectly via educational level (not in the East in '96 due to lack of significance for educational level itself).

In the West in 1981, the highly significant relationship found between parental SES and both typicality of career choice and higher level of academic attainment suggests that parents had both a direct and indirect influence on the typicality of their daughter's career choice. In considering what mechanisms might underpin this finding, the West's orientation towards individual freedom of choice and low level of direct interference in family matters would seem likely to play a role. In other words, the West's social and economic systems enabled cultural capital, in terms of family beliefs and values, to have a direct influence on career choice. More than this, however, capitalist societies, such as Germany, have at their core the principle of private ownership and the free transference (in the sense of decisions over destination) of amassed capital. The accumulation of fiscal capital is frequently associated with an increase in human capital (education and skills) and cultural capital (social status and experience). By means of 'social inheritance', families seek to pass on their acquired 'capital' to their children, whom it is assumed will maintain the status quo, thus supporting the concept of social reproduction: From an occupational point of view this mechanism can lead to the children of engineers becoming engineers, of lawyers becoming lawyers, and of politicians becoming politicians etc.. However, as the dependent variable is based on the typicality of occupations (as determined by the concentration of women in each occupation in the respective regional labour force), and as occupations with low concentrations of women can be either professional (e.g., doctors in the West in '91) or non-professional (e.g., painter and decorator), no

inference can be taken about the status of the occupation in question. The same mechanism of cultural reproduction given above could equally lead to the daughter of a painter and decorator becoming a painter and decorator (see Chapter 5 for examples of this process). In other words, although the predicted relationship is between high levels of parental SES and career atypicality on the part of their daughters, it does not follow that the atypical career chosen has also to be high status. In the West, however, over 60% of the atypical occupations are traditionally high status male-dominated such as engineering (26%), law (22%), and politics (6%).

In the East in 1991 no significance was found for the proposed relationship between parental SES and typicality of career choice. As this path was highly significant in the West, this lack of significance could be indicative of the systemic differences that existed between the two regimes prior to reunification. Whereas in the West, greater individual freedom meant that the benefits of parental SES could be exploited, central control over the distribution of the workforce and a collectivist approach to social and economic organisation in the East left little room for individual preferences (see case studies in Chapter 5). In the East, whilst career choices for the majority of young people were based on merit they were also influenced by other factors, such as level of political activity at family and individual level, and opportunities were strongly determined by centrally perceived needs. Girls not earmarked for higher education were typically given a choice of three or four stereotypical female careers, such as hairdresser or shop assistant (Nickel, 1992; see case studies in Chapter 5), sometimes even being printed on pink paper, whilst the boys were given equally gender-stereotyped list on blue paper (Nickel, 1993). Thus, any direct influence parents could have on their daughters' specific career destinations was severely curtailed (Vondracek, Reitzle, & Wiesner, 1999). However, the construction of the factor might also be problematic when attempting to assess the influence of family



background on the careers of girls in the GDR. The normal assumption that occupations requiring higher levels of education and training, such as those carrying professional status like doctor and lawyer, are also of high social status does not follow in socialist societies such as the GDR. Here social influence was more through party status, which traditionally favoured a blue-collar background (Erich Honecker, for example, although Party Chairman – the highest position in the GDR – always gave his profession as ‘carpenter’). Thus, had it been possible, it would have been more appropriate to compute this variable based on party rather than job status. Certainly it is known that party affiliations could influence job selection procedures and that incurring party disapproval or censure could have a negative effect on career outcomes (von Lepinski interview, and case studies in Chapter 5). The lack of significance of parental SES could also suggest that the East’s system of vocational choice was more meritocratic and that occupational selection was simply less subject to network advantages and the influence of higher status parents (except where party influence was involved).

The strongest path in the East in '91 is between parental SES and educational level, which suggests that parental influence, perhaps because of its restricted effect elsewhere, was manifest through support of their daughter’s educational attainment. Here, the same mechanism as in the West, namely, cognitive support and social reproduction, was able to operate despite contextual differences. Indeed, social reproduction in the East was mainly through education (Solga, 1995) so that despite the GDR’s ideology that set great store by children from the working class entering further education, by the 1980’s more children from a working class background were receiving university-level education in the West than in the East, where they were heavily outnumbered by students whose parents belonged to the intelligentsia (Geißler, 1992).

As these are cross-sectional samples and not a longitudinal study, differences between the '91 and '96 models cannot be discussed in terms of change per se but rather in terms of observed differences between the two samples. That said, when the models for the West in '91 and in '96 are compared, the path between *Parents* and the dependent variable is significantly weaker in '96 than in '91. This could reflect changes in the labour market between 1991 and 1996 whereby West Germany experienced a significant rise in unemployment<sup>10</sup> and economic recession. When unemployment is high, restricted job possibilities can also mean less risk-taking in terms of career choice and also less leeway for parental influence. Subsequent changes in the labour market, which lead to the reduction of training and employment opportunities in many of the traditional industries (Woche im Bundestag, 1994) may also have meant that parental influence on their offspring's career choice was reduced as their own skills and experiences, particularly with regard to e-commerce and technological developments, became less relevant.

The continued lack of significance on the path between parental SES and typicality of career choice in the East is against expectations. It had been hypothesised that following reunification in the East more factors would play a significant role, mirroring the effect found in the West, and that this factor in particular would gain significance. However, despite six years elapsing after reunification and the introduction of the West's market-based economy, the East's labour market (as was shown in Chapter 3) had not become like the West. The drastic measures taken to bring the East's economy and work force into line with that of the West could not be recovered from in such a short time. Rather than parents having more influence over their daughter's

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<sup>10</sup> The trend in unemployment was higher for men than women in the West during this period. For men it rose from 6.3% in 1990 to 10.4% in 1996; for women it rose only from 8.4% to 10.4% over the same period. This is in sharp contrast to developments over the same period in the East, where male unemployment rose from 8.5% in 1990 to 13.7% in 1996, and female unemployment from 12.3 % in 1990 to 19.9% in 1996, having



career destinations after the demise of the central control of the GDR, it is likely that they had even less. First their own experiences, qualifications and the support that they could offer concerning employment were severely reduced. Unemployment in the East was rife, and many of the areas of employment introduced in the East required different qualifications and skills; qualifications from the GDR were often no longer valid, and many skills and experiences were annulled so that parents found themselves in the same 'novice' position as their offspring (Walper, 1995).

Parental investment: The degree of parental investment in the upbringing of their daughters via level of engagement in joint leisure activities was proposed as related to typicality of career choice and educational level. Overall, this factor was not found to be significant in either of these paths and only achieves the lowest level of significance in the East. However, the significance found in the East in '91 suggests that higher levels of engagement in joint activities, such as sport, reading, music and shared hobbies, was linked to daughters' higher educational level in this context. This could be linked to the particular value placed on sport and music (especially the former) in the GDR. In 1996, in the East, significance is found for the path between parental investment and typicality of career choice but not in the direction predicted, suggesting instead that higher levels of joint parent/daughter activities correlates with typical career choice rather than atypical. Although unexpected, given the context of East Germany in 1996 as revealed by the analyses in Chapter 3, the finding is plausible. As discussed earlier, reunification had resulted in an extremely insecure labour market in the East with unprecedented levels of unemployment, especially for women. When this instability in the labour market is coupled with an increase in traditional female-dominated occupations (i.e., the service sector), it is plausible that parents would encourage their daughters to play safe by looking for work in more accessible and readily available

areas, i.e., in female-typical areas, which were also expanding. Where a close parent/daughter relationship existed, as might be assumed from high levels of joint leisure activity, parents would have greater opportunity to be influential in this respect.

The non-significance of this factor in the West may be linked to the earlier autonomy of females in the West, as was found by Silbereisen and Juang (1999), and which was linked to girls in the West spending less leisure time with their parents and more time with their peers (Walper, 1995). This East/West difference in time spent with families is supported by the data for both '91 and '96 which shows that a larger portion of the West samples reported very low levels of engagement with parents in such activities. This might also suggest lower levels of parental monitoring in the West as was found in the comparative study by Meschke and Silbereisen (1998) where higher levels of risky leisure behaviour were related to West Germany residency and lower levels of parental monitoring, and thus to lower levels of parental influence through social contact.

### Personal attributes

Ambition: was not found to play a significant role in either the East or the West, nor in either of the relationships proposed in the model. However, as explained in the introduction to this chapter, the measure of ambition used in the '91 instrument (respondents estimated their level of ambition against a 5 point Likert scale) was not included in the '96 instrument, so that a measure had to be constructed from other items for this comparative work. Although the constructed variable *Ambition* correlated significantly with the original measure, the coefficient was not high ( $r = .19, p < 0.01$ ). When the model is run for the East and West in '91 using the original measure of ambition, a highly significant relationship is found between ambition and educational level ( $\beta = .14, p < 0.001$ ;  $\beta = .08, p < 0.01$ , respectively) but in neither region is the direct path with typicality of career choice significant. As the inclusion of this measure of



ambition also increases the explained variance of the mediating variable *Edlevel* (from  $r^2 = .25$  to  $r^2 = .27$  in the East, and from  $r^2 = .26$  to  $r^2 = .27$  in the West) and strengthens the beta coefficient of the path between educational level and the dependent variable (albeit the increase of these values is slight) it suggests that ambition does play a significant (albeit indirect) role in the typicality of women's career choice. It should also be mentioned that, as an examination of the data shows that 59% of the West sample, and 61% of the East, in 1991, considered themselves to be either ambitious or very ambitious, and only 5% in the East and 8% in the West felt that they were not at all or only slightly ambitious, it could be that even this measure was not optimal to capture the meaning of 'ambitious' as required in the context of this study, i.e., meaning instrumentality, or the extent to which a person is determined, striving, competitive, motivated, even 'go-getting' or 'pushy'. In future research, therefore, a stronger measure of ambition, more suited to typicality of career choice, should be sought.

Attitude to life: Although the attitude with which the future is approached, and an individual's level of self-efficacy or locus of control, are known to be involved in the direction of women's career choice, no significant direct relationship was found between the construct *Liferview* and typicality of career choice in any of the models. However, a significant relationship was found between respondents who strongly disagreed with statements that suggested identity diffusion i.e. being unconcerned about the future and a more irresponsible attitude to life-planning and higher levels of educational attainment. The significance of the relationship is equally strong in both regions and at both points of measurement. The absence of any direct significant relationship with typicality of career choice in any context is unexpected. It may simply be that this factor was not relevant for career choice typicality, and that women who chose female-typical careers can be just as efficacious and planful as women seeking work in female-atypical careers.

### Play and leisure interests

The model proposes that females who report low-levels of engagement in female-typical childhood play activities, and high levels of atypical or gender neutral play would be more likely to enter atypical careers, to have higher levels of education, and to have a high level of interest in Maths and Physics whilst at school. Overall, it is one of the most persistently significant factors in the model, although the significance of the paths differed considerably with context. In the East in 1991, typicality of childhood play is only found to be significant in its relationship with educational level, whereas in the West, all paths achieve significance. The interpretation of this may lie in the different approach to the role of education taken by the two regions prior to reunification. In the West, the transfer of social capital (as in beliefs and behaviour) was seen as primarily the responsibility of the family, with schools providing exposure to comprehensive information and a platform for debate in order to produce a 'gebildet' (educated) individual. In the East, the social development of an individual was considered to be essentially a matter for the state, the aim being to produce the 'entwickelte sozialistische Persönlichkeit' [developed socialist personality] where the good of the group was to be the focus of an individual's interest and not themselves. In pursuance of this, leaving child-rearing to parents was considered too open to variance and it was also for this reason, as well as to enable women to play a fuller role in society, that extensive childcare provision was made (Ahnert, Lamb, & Seltenheim, in press).

The most important point of the GDR's approach to the socialisation of its citizens is that it was carefully orchestrated, involving detailed programmes of instruction for children from as young as two years of age. These programmes included instruction in play – children were not to be left to learn to play on their own – and care was taken to ensure that all children (male and female) learnt (and experienced) all



forms of play: Indeed, the reluctance to play with certain toys or to join in with particular games, was deemed a 'deficit' to be eradicated (Ahnert, et al, in press). Thus, the image of girls only playing with dolls, or boys only playing with toy soldiers, was alien to the rules of instruction laid down even for these very young children (Schmidt-Kolmer, 1968). There was, of course, no control over games played in the schoolyard, or at home, which would account for within-group differences in the East. But it does mean that girls in the East, particularly those older respondents who were in kindergarten when such programmes were in their hay-day (during the 1970s) would, by default, have had a broad play experience. However, why greater significance for the link between typicality of childhood play and educational level is found in the East is not so easy to understand. It could be that there is a relationship between the more physical aspects of male-typical play and the high status placed on sport, so that girls who engaged less in passive, female-typical play came closer to the GDR's ideal of the 'entwickelte sozialistische Persönlichkeit'. Nonetheless, this is purely speculative and further research is needed to clarify this finding.

In the East in 1996, typicality of childhood play is found to be significant in predicting typicality of career choice but not educational level. As will be discussed in Chapter 5, one possible reason for the strong significance of this path (not seen in '91) could be that changes in the structure of opportunity for women in the East following reunification, meant that individual interests, as expressed through atypical play in childhood, were now more relevant for typicality of career choice. In the West in 1996, typicality of childhood play is again found to be a significant predictor of educational level and of typicality of career choice, but at a lower level of significance is seen for the latter relationship. One consideration for this difference was thought to lie in changes in the nature of play in the West between '91 and '96, whereby increases in the popularity of computer-based games and a subsequent rise in more isolated play may

have meant that the examples of atypical play given in the research instrument reflected the experiences of children less well for the '96 sample than for the '91 sample. However, when the data for the West in '91 and '96 are compared for this factor, almost no difference in distribution is found i.e. the measure itself wasn't weaker in '96 than in '91. An alternative reason for the weak significance of typicality of play in the West in '96 may just be that the structure of opportunity has changed so that the typicality of play experiences were in general less relevant.

It was expected that high levels of technical interest would correlate with atypical career choice and higher academic achievement. In the East in '91, however, this factor does not achieve significance for any one of the predicted relationships, possibly reflecting the paucity of computers and cars (especially the former) in the GDR, on which this measure was based. However, it is also likely that, because of the GDR's system of job allocation, such interests had no direct effect on career choice or associated factors, such as educational level and an interest in Maths and Physics. In the West in '91, where children had greater access to computers at home<sup>11</sup> and at school, the paths between *Compcar* and level of education and interest in Maths and Physics were both highly significant, supporting the theory of a relationship between girls with higher levels of technical interest and higher levels of education and an interest in Maths and Physics. Through these associations, a link between high level of technical interest and atypical career choice can be inferred.

In the East in '96, the significant relationship between technical interest and educational level, and with interest in Maths and Physics, suggests a change in the technical climate, as reflected in the growing access to - and importance of - computers in schools and the workplace following reunification. In the West in '96 this factor

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<sup>11</sup> In 1993, although 16% of households in the former GDR had a computer, compared to 22% of households in the West, 76% of the computers owned by families in the East were purchased after 1991



achieves the same level of significance in its relationship with level of education and interest in Maths and Physics as in '91 indicating a sustained (if not increasing) importance in the labour market of a familiarity and interest in technological things. It is also interesting to note a highly significant covariance<sup>12</sup> ( $p < 0.001$ ) between level of parental SES (Parents), parental investment (*Parint*) and daughters' level of technological interest in '96 (no significance in either region in '91). This could indicate parental support for their daughters' involvement with technical things, possibly in recognition of its growing importance in education and for better employment opportunities in uncertain labour markets.

Following the work by Grusec et al (1996), which found that girls are more likely than boys to be assigned routine household tasks as they get older, and that this could account for their being assessed as more caring of others, it was hypothesised that these girls would subsequently be more likely to choose caring, i.e., female-typical careers. Whilst significance was found for this factor in both regions in '91, the direction of the relationship was against prediction, suggesting that girls who are regularly engaged in helping with household tasks are more likely to choose atypical careers. As the reason for these findings are unclear, the data for the East and West in '91 were examined for possible clues. From the data it would seem that, whilst the majority of females reporting high frequency of engagement in household tasks are, as hypothesised, following female-typical careers, such as nursing or office work, a greater percentage of the women following atypical careers also report high levels of engagement in household tasks. When this is seen in the context of the model, therefore, the significant finding is for a relationship between frequent engagement in household

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(Statistisches Bundesamt, 1997).

<sup>12</sup> Because of the broad scope of this study it is not possible to include an interpretation of the co-variance findings from the models. However, they are included to offer the reader the fullest possible information, and to present a clearer picture of the relationships between the factors and the mediating and dependent variables.

tasks and atypical career choice. In addition, instructions to respondents asked them to report the level to which they had undertaken household tasks for their parents in the previous twelve month period. It is probable, therefore, given the age distribution of the sample, that many would have left home before this period and would therefore have given negative responses to the items, even though they may have engaged in routine household task when living in the family home. In light of these considerations, no firm conclusions can be drawn about the role that allocation of routine domestic tasks might have on the typicality of girls' career choice and further research focussing on this topic is required.

#### Timing of physical development

A measure of pubertal timing was included in the hypothetical model because of the findings by Katz (1986), Stattin and Magnusson (1990) and others, that girls who are early in their pubertal timing are at risk of lower levels of educational attainment, and of following a more traditional female career role. As Stattin and Magnusson (1990, p303) put it, early maturation in girls seems to lead to,

...a general sensitivity to aspects (behavior, attitudes, etc.) that connote a more mature stance- early hetero-sexual orientation, early sexual intercourse, low academic aspirations, early childbearing and family life orientation, to low adult educational level and low job status.

In 1991, no significance was found for the proposed relationship with either career typicality or educational level in the West, whereas in the East a significant relationship was found for both paths. However, contrary to prediction, the direction of the relationship between pubertal timing and educational level (which was significant at the 0.01 level) suggests that early pubertal timing was related to **higher** and not lower levels of education, while the relationship between pubertal timing and typicality of career was as expected i.e., that early pubertal timing correlated with typical career choice.



As this finding was against expectations and not seemingly supported by the literature, the validity of the result was at first doubted. Consequently the data were checked to ensure no error had occurred in the construction of the variable. Once assured that this was not the case, the literature was re-examined and the findings considered within the specific context of the GDR. In addition, the matter was discussed with women and colleagues who were socialised in the East. Following these investigations the findings are plausible. First, the research upon which the initial hypothesis was based i.e., that early physical development in girls is a risk for lower levels of education and early child rearing, was conducted in non-Communist countries such as Sweden and the USA, where the ideology underpinning social organisation and responsibility was very different to that of the GDR. It is plausible to suggest that the negative consequences of early maturity, as outlined by Stattin and Magnusson, were not all negative in the context of the GDR. First, full-time child-care provision from the early weeks after birth meant that, should a girl become pregnant, she did not have to forgo her education in order to satisfy a commitment to early homemaking or childrearing<sup>13</sup>, (limited childcare opportunities are cited by early maturing girls in the study by Stattin and Magnusson, 1990, as hindering their participation in further education at adult age). Further, there was no mutual exclusivity between full-time work and child-rearing (especially in high-status positions, as suggested by some of the women sampled in Chapter 5) in the GDR, where provision was made for women to combine both roles. Second, preventive measures such as the contraceptive pill were freely available several years before in the West (where it was initially available only for married women). Third, tight social control, both directly by the state and indirectly

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<sup>13</sup> In fact, early child-rearing was seen as a positive in the GDR and was actively encouraged by the state's social provision attached to children which provided full-time childcare from as early as 6 weeks of age, as well as housing and financial benefits. Indeed the state preferred women to have their children whilst still studying because it caused less disruption later in the workplace.

via parents and peers<sup>14</sup> meant that much of the deviant behaviour for which early maturing girls are said to be at risk (truancy, poor school behaviour and performance, associating with deviant groups, alcohol and substance abuse) and which are known to lead to poor educational attainment, was almost unknown in the East: Where deviant behaviour did occur it could have severe consequences not just for the young person concerned but also for their family.

Nevertheless, whilst this may explain why early pubertal timing did not have the same negative consequences for girls in East Germany, the question of why these girls might have been favoured under this system cannot be so easily explained, and indeed here one can only speculate as to what processes may have been involved. One clue might lie in the fact that, if the negative consequences are removed, early physical maturity is known to have advantages. First, early physical maturity, with its accompanying signals of adult status and mating readiness, is known not only to trigger psychological reactions in the girl herself (post-menarcheal girls have reported feeling more 'womanly' - Kestenberg, 1961; early pubertal timers as feeling more mature, and more romantic than their same-age peers- Stattin & Magnusson, 1990) but also to send status messages to those in her environment. Mothers, in particular, are known to interact with their early-maturing daughters differently to mothers of on-time or late developers, behaving in a way that acknowledges (and even encourages) adult-like behaviour (Weichold, Schmitt-Rodermund, & Silbereisen, 2000). Teachers too are prone to associate physical maturity with cognitive maturity, and some researchers have found that there is some evidence to support such expectations - post-menarcheal girls

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<sup>14</sup> Pupils were almost as much supervised by their classmates as by their teachers via the mentoring system whereby high achieving pupils coached their underachieving classmates. It should also be remembered that the educational emphasis was on the development of the 'entwickelte sozialistische Persönlichkeit' and that underachievement was seen as deviant, individualistic and against the good of the group. Further, there was no system for repeating a year, as in the West, so that group cohesion was maintained throughout the time at school, which may also have given early maturing girls an advantage



are able to express themselves more clearly and to organise their thoughts better (Kestenberg, 1961), and demonstrate more mature interactional behaviour (Hauser & Hill, 1991), and a meta-analysis of the relationship between pubertal timing and cognitive development has shown that early maturers have and maintain a slight advantage in terms of IQ test performance (Newcome and Dubas, 1987). Thus the early maturing girls may have seen themselves, and been seen by their teachers and later maturing peers, as more adult-like. This in turn may have lead to a positive teacher/pupil interaction whereby, "the more positive the children's perception of their teacher's feelings, the better their academic achievement is, and the more desirable their classroom behaviour as rated by the teacher becomes" (Burns, 1982, p233). In addition, in a society where, "rewards were based not on objective measures of achievement, but rather on the subjective assessment of one's peers" (Macek, Flanagan, Gallay, Kostron, Botcheva and Csapo, 1998, p552) to be perceived as more mature would have been a distinct advantage to one's overall status.

Following from this, and another possible reason as to why early pubertal timing correlates with higher levels of education in the East, is the organisational structure and role of the GDR's youth movement, the FDJ (Freie Deutsche Jugend – Free German Youth) and the politicisation of the education system. The FDJ was active in all aspects of GDR society, including schools, and whilst membership was not compulsory, non-membership was seen as anti-social and could be cause for not being selected to study for the Abitur. Leaders (or Secretaries, as they were known) of an FDJ group (which was typically a school class) were voted for by the class members, and taking a leadership role, and being active within the FDJ was seen very favourably by the Party: Access to study for the Abitur was politically controlled (so that educational

achievement was not so much based on own achievement strivings or parental influence but on more socially-based criteria, especially political involvement and conformity). It may be then that being physically mature early gave these girls a greater chance of being selected for an active role within the FDJ and that this in turn meant a greater chance of being selected to study for the Abitur. However, it could simply be that early maturing girls in this context had a more mature and conformist approach to school and that the combination of non-negative consequences of early child-bearing and strict social control that curtailed risky behaviour meant that the natural physical advantages of early maturity were able to be effective. In '96, pubertal timing remains insignificant in the West but is still significant in its prediction of educational level in the East, and in the direction observed in the 1991 data. In sum, ruling out the possibility that the regional differences observed are due to physical differences between the East and West groups, findings suggests that pubertal timing can play a significant role in typicality of career choice and educational level, but that the direction of that effect is highly dependent on social context.

#### Educational level

In 1991, the role of level of educational attainment in predicting the typicality of women's career choice is seen to be highly significant in both the East and the West. However, the significance of the relationship is stronger in the East, which, when combined with the lack of significance found for a direct relationship between parental SES and typicality of career choice, suggests that the East was more meritocratic than the West. In the West in '91, where more factors concerning home background and personal attributes have a direct significant relationship with the dependent variable, the link between educational level and typicality of career choice is significantly weaker.

The very high significance of level of education for the typicality of women's career choice in the East during the time of the GDR could lead to the assumption that



this relationship was significant because of the likelihood of an atypical career equating to a professional occupation, especially in the East where it is known a much higher percentage of women worked in the professions compared to women in the West at this time (see Chapter 3). This is not, however, born out by the data. When the atypical occupations (9% of the sample) engaged in by the East 91 sample are classified as professional (degree-level entry) or non-professional (all other occupations) analyses show 66% of the atypical careers to be non-professional. Of the respondents in non-professional atypical occupations, however, 44% have the highest educational level i.e., the Abitur (equivalent to 'A' level in the UK), and only 7% have the lowest (elementary, non-academic, non-technical track). This seeming underemployment of women bears out the comments by Nickel that girls in the GDR were as eager as boys to receive a sound vocational training but that they also knew their chances were less when it came to attaining the more lucrative and higher status positions (Nickel, 1992, p37). Besides this explanation, the often reported phenomenon of women seeking work in female-atypical careers having to present higher than average qualifications and having to fight harder for acceptance was also evident in the GDR (Nickel, 1992; see also case studies in Chapter 5).

Educational level is also found to be a strong predictor of typicality of career choice in the West, but here the relationship is significantly weaker, and forms part of a group of factors rather than standing out as the strongest feature of the model. In addition, when the West'91 data is analysed concerning the extent to which the predictive power of educational level is related to the type of atypical career (i.e., professional or non-professional) the results are noticeably different to those of the East. Of those in atypical careers in the sample (8% of the sample) 34% are in non-professional occupations (against 66% in the East); of these, 31% have the highest level

of education (against 45% in the East) and 37% have the lowest level of education (against just 7% in the East).

In 1996, a significant difference is again found between East and West Germany in the relationship of educational level with typicality of career choice, but now the strength of significance is reversed – in that it remains significant in the West but no significance is seen in the East. It would be implausible to suggest that educational level was no longer significant for career choice per se, but it is not implausible to suggest a reduction in the significance of educational level for typicality of career choice. As was shown in Chapter 3, the labour market of East Germany had changed drastically following reunification resulting in exceptionally high unemployment, especially for women, and a labour market where supply far outstripped demand. Added to this, increased employment possibilities were found in traditionally female-dominated occupations, and an increased percentage of women are found working there (see Chapter 3). Further, many qualifications awarded by the GDR were no longer valid following reunification, so that a situation similar to that experienced by immigrants to countries such as America and Australia may have been experienced. Here, people who were highly qualified in their own country may have to take lower-grade work because their qualifications are not recognised in their new country. If this was the case, then it could explain the reduced significance of educational level for typicality of career choice.

However, analysing the East '96 sample for the educational level of those in atypical careers (14% of the sample) shows that fewer of the women in non-professional atypical careers in the sample have the highest level of education than was found in '91 (15% against 45%). In addition, a greater percentage of the atypical group are in non-professional careers (77% compared to 66% in '91). Nevertheless, 85% of all women in atypical careers in the East 96 sample have education at Realschuleabschluss (technical



track leaving certificate) or Abitur level, and 47% of these are engaged in non-professional atypical careers, such as painter/decorator, carpenter, fitter/ mechanic, and electrician.

In the West in '96, domestic and global trends towards more flexible working practices have been implicated in the increased number of women entering the labour market in the 90s (especially as part-time workers) rather than systemic change as seen in the East. Nevertheless, the effect on the structure of opportunity for women in the West was quite similar; more women crowding into female-typical occupations, and an overall increased competition for jobs. Thus the weaker significance of educational level for typicality of career choice seen in '96 could reflect a trend towards underemployment. However, when the atypical group (14% of the sample) in the sample is analysed by educational level this is again not fully supported. Almost two-thirds of the atypical group are in non-professional careers and 33% of them have the highest (Abitur) level of education.

In sum, educational level is found to be a highly significant predictor of typicality of career choice in all regions except for the East in '96, which presents an extreme, even deviant context due to the disruption caused by reunification. Nevertheless, this supports the argument that the significance of individual factors for typicality of career choice is heavily context dependent. Further, educational level is not wholly related to entry into higher status occupations and is evidently significant for other levels of atypical job status.

Preference for studying Maths and Physics: The relatively poor showing of this measure (*Favsubj*), whereby the factors proposed as predicting an interest in Maths and Physics never account for more than 4% of the level of variance, may be due to the measure itself rather than a rejection of the hypothesis, especially given the very strong support in the literature for a link between an interest in Maths and Physics and typicality of

women's career choice. First, the weakness of the factor might stem from respondents being asked to list their favourite school subjects but not being asked to rank them in order of preference. It may be, therefore, that although it is logical to assume the order in which subjects were given would indicate a level of preference (hence the coding of whether Maths and/or Physics occurred within respondents' first five choices) it did not truly reflect level of interest. Likewise, although subject preference can be expected to be related to success or ability in that subject, the expression of liking or having an interest in a subject cannot imply level of attainment or guarantee an intention to pursue the subject at a higher level (although findings by Koeller, Daniels, Schnabel, & Baumert, 2000, using an East/West German sample – suggest that there is a strong link between level of interest in Maths and following advanced courses in it). Nevertheless, although weak as a mediating factor for concepts such as technical interest and typicality of childhood play and typicality of career choice, the factor itself is found to be significantly related to the dependent variable in the West in both '91 and '96. The relationship found supports the proposed relationship between higher levels of interest in Maths and Physics and less likelihood of a female-typical career choice.

The reason why the factor is significant in the West but not the East can only be surmised. Regional differences in '91 could be related to systemic differences (as previously discussed) whereby the educational system was less differentiated in the East so that the study of Maths and Physics by girls in the West might be more significant for typicality of career choice. This supposition is partly supported by the modification indices in AMOS that request a path between educational level (*Edlevel*) and interest in Maths and Physics (*Favsubj*) be inserted to improve the fit of the East models to the data. Certainly, when this path is inserted it has a strong impact on the fit of the model, especially in '91, and the path itself is significant at the 0.01 level, suggesting a relationship between higher levels of interest in Maths and Physics and higher levels of



education<sup>15</sup>: This may in turn be related to the GDR's particular support of these subjects at higher levels (particularly Maths – as is evident from the case studies in Chapter 5) and especially following the 'technical revolution' that began in the mid-70s.

### Conclusion

This chapter set out to test the hypothesis that, although a number of internal factors have been shown to be functional in the typicality of women's career choice, the extent to which the individual factors are significant will be dependent on context. In contexts that are supportive of women's work role, such as the GDR, women are assumed to encounter fewer barriers in accessing available occupations, so that fewer factors are expected to be significant in predicting atypical career choice. In contexts that are not supportive of women's work role, such as West Germany (and East Germany post-reunification) it is expected that more barriers will stand between women and atypical careers, so that more internal factors are called into play in order for them to be overcome.

Looking at the findings from the models covering the two regions in 1991 and 1996, the hypothesis that context plays a significant role in the functionality of the factors suggested by the model as predicting typicality of women's career choice, is confirmed. However, the hypothesis concerning the relationship between supportive/non-supportive contexts and the number of factors significant in predicting typicality of career choice is only partly upheld: Fewer factors are found to be significant in the East than in the West in '91, and than in the West in '96, but the expectation that more factors would be significant in the East in '96 (i.e. post-reunification and the adoption of the West's market-lead economy) was not realised. In fact, fewer factors were significant in the East in '96 than in '91, or than in the West at

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<sup>15</sup> Such a path had no significant effect on either of the West models.

either point in time and, as has been seen, the East in '96 cannot be claimed to have been a supportive context for women in atypical careers.

The supposition that the East would more mirror the West in '96 was based on the concept of regional convergence, expected to be seen emerging some time after reunification once the new systems had become embedded in society and as people adjusted to the new structures. As is evident from the model, and from the literature, both these assumptions were incorrect. In fact, the convergence hypothesis has been found wanting by other research into regional post-reunification developments, with research now tending to focus more on the concept of the East having separate developmental paths from those of the West (Reitzle, 1999).

The unexpectedly poor showing of the East '96 model may be related to the extreme circumstances in the East's labour market, and the weak power of the model certainly suggests that most of the influence governing women's typicality of career choice lay with other mechanisms relating to the broader context and structure of opportunity outside of the internal factors incorporated into the model. As has been discussed, the employment and economic situation in the East towards the end of the 90s was so extreme that it can be said to represent a deviant context, especially for women – high unemployment, reduction of support services for working mothers, increased numbers of single-parent (female) families, and a redrawing of the employee/employer relationship (more short-term employment contracts, greater drive for productivity, less secure work situation, different skills emphasis, etc.) particularly disadvantaged women (Nickel, 1992). Ironically, therefore, it would seem that the move to a free market economy in the East actually replaced the constraints imposed on individual career choice by the GDR's system of state planning with constraints linked to the disrupted state of the labour market following reunification.



Returning to the first part of the hypothesis, in terms of the contexts provided by these regions, what do the results say concerning the internal factors related to women's atypical career choice? From the models, it can be seen that no one factor is consistently significant in its direct prediction of atypical career choice, although two factors, typicality of childhood play and educational level, maintain significance in three out of the four contexts examined. In terms of factors predicting educational level (and thus having a significant indirect relationship with career typicality) parental SES and attitude to life are highly significant in all four contexts: Typicality of childhood play and technical interest also achieve a high level of significance in three out of the four contexts. Of the factors suggested as predicting level of interest in Maths and Physics, only technical interest maintains significance across both regions. What this also shows is that the significance, and the level of significance of factors is dependent on context: In the West, parental SES is highly significant in directly predicting typicality of career choice, as is a preference for Maths and Physics whilst at school, but neither of these factors play a role in the East. Here, pubertal timing is significant, both in its direct prediction of typicality of career choice, and in its relationship to educational level (albeit, not in the direction predicted) but it has no significance in the West.

In looking for a profile of factors from each region, in the East in '91, the model shows a relation between women with high levels of education, who had engaged frequently in routine household tasks for their parents, and who were physically mature at an average, or later than average age (i.e. not early development) and atypical career choice. Further, girls with high levels of academic achievement were likely to have parents with high levels of SES, and to have parents who were prepared to invest in their upbringing through spending time in joint activities: These girls had engaged in more male-typical or gender neutral than female-typical play activities when young, had

an approach to life that was highly agentic and planful, and had physically matured earlier than their peers<sup>16</sup>.

In the West in '91, the profile of women making atypical career choices is different. Here, such women are also likely to be those with high levels of education, but they are also likely to have parents with high levels of SES, to have an interest in Maths and Physics, and to have engaged in more male-typical or gender neutral than female-typical play activities when young. High levels of education are, in turn, most likely to be found in girls with parents with high SES, with a history of higher levels of atypical childhood play, with a highly agentic approach to the future and life planning, and with a strong interest in technical things when young. Their interest in Maths and Physics is both linked to their atypical play when young, and to their level of interest in technical things. In the West, (supporting the idea of more contextual stability) an almost identical profile is seen in '96 to that found for '91, the only difference being that typicality of childhood play is no longer related to an interest in Maths and Physics.

In the East in '96, however, a very different profile is presented to that seen in '91, and to that seen in the West: Now, the only factor linked to women who have made atypical career choices is their lack of engagement in typical - as opposed to atypical or gender neutral - play activities when young. (The link for women reporting a high level of parental investment in terms of experiencing joint activities with their parents is to female-typical career choice.) However, the profile of factors for women with higher levels of education does bear some similarity to that of the East in '91, but more importantly, it is now almost identical to that seen in the West i.e., women with higher levels of education are likely to have parents with high levels of SES, to have an agentic

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<sup>16</sup> The different direction of the significance of pubertal timing in the East is difficult to interpret. It would seem that early pubertal timing was related to higher level of education, which was in turn related to atypical career choice. But the direct link between pubertal timing and typicality of career choice suggests that, without the mediation of educational level, early pubertal timing operates as predicted and is linked



and planful approach to life, and to have high levels of interest in technical things. The main difference with the profile of women with higher levels of academic achievement in the West is that women in the East are again significantly more likely to have been physically mature earlier than their peers, and that typicality of childhood play is not a significant factor. Added to this profile, a link is found between an interest in technical things and an interest in Maths and Physics in both regions.

The second part of hypothesis suggested that, as the family had remained the unit of social organisation in both regions, factors relating to parents and family background would be particularly influential in the typicality of women's career choice in both regions, but that the effect would be stronger in the West than in the East before reunification, with a move towards regional convergence after reunification (see beginning of this chapter for the hypothesis in full). Certainly, parental SES in the West is seen to play a more significant role in directly predicting typicality of career choice than in the East, where significance is only found indirectly via educational level. However, an effect for level of parental investment is only seen in the East, although the direction of the relationship does not support atypical career choice but the opposite – as has been discussed. In fact, as much of the preceding discussion has dealt in detail with many of the points arising from this hypothesis, they will not be repeated here. Suffice to say, the prediction that less significance for relationship between the parental SES in the model and typicality of career choice would be found in the East in '91 than in all other contexts was only partly supported by the findings, in that the changes predicted for the East in '96 were not found, and that it was found to be highly significant in all models in predicting educational level. Further, significance for level of parental involvement was only found in the East.

In conclusion, by confronting the theoretical model of factors involved in women's atypical career choice with the data for '91 and '96, it has been shown that, although a constellation of factors (high levels of education; high parental SES; an agentic and planful approach to life; low levels of female-typical and high levels of male-typical or gender neutral childhood play; high levels of technical interest; and an interest in Maths and Physics) can be seen to persistent in their influence across all contexts examined (albeit at different levels of significance, and varying as to whether the effect is direct or indirect), context does indeed play a major role in the ability and strength of the individual factors to predict the typicality of women's career choice. More than this, however, as the highest explanatory power of any model is just 17%, it is obvious from these findings that the greater part of factors influencing typicality of career choice for women lies outside the internal factors included in the model. In part, the analyses in Chapter 3 have already indicated what these external factors might be, but such quantitative work can only hint at the mechanisms behind the workings of the factors involved. In particular, it is important to understand something of how the two spheres of influence (internal and external) interact to construct the structure of opportunity within which women make career choices. The next chapter, therefore, will turn to self-reported evidence from women in East and West Germany who have broken through the barriers of occupational gender-typicality and made atypical career choices.



## **Chapter 5: Women in atypical careers in East and West Germany**

This chapter, as well as forming the concluding part of this work, has the aim of enriching the findings from the two previous statistically-driven chapters. Having seen in Chapter 3 the extent to which East and West Germany differed in the structure of opportunity for women to make atypical career choices, and having found from Chapter 4 that a very large part of influences on the typicality of women's career choices lies elsewhere other than within the internal factors contained in the causal model, it is necessary to turn to women who have made atypical career choices in the two regions. By so doing it is hoped to shed light on what factors, other than those included in the causal model, might be operational in women's atypical career choice, and in particular to inform about the mechanisms involved, especially the process of internal/external factor interaction.

This section will also test the final hypothesis that women who engage in female-atypical work are not an homogeneous group: First, it is expected that the effect of context will result in regional differences in the personal factors, motives and influences manifested by women who have made atypical career choices. Second, because atypicality itself has been shown to encompass a very divergent group of occupations (distinguished primarily by level of education required for entry i.e., male-dominated professional and non-professional occupations – see Chapters 3 and 4) significant intra-regional differences are also expected. In other words, women choosing female-atypical professional occupations will show little commonality with women opting for female-atypical non-professional occupations in terms of personal factors, motives, and influences steering their career choice. To fulfil these aims, data were gathered by semi-

structured questionnaire<sup>1</sup> from a sample of women in East and West Germany active in female-atypical professional or non-professional occupations in 2001. For the sake of continuity with the previous chapter, the questionnaire incorporated the items used for construction of the variables in the causal model tested in Chapter 4. Thus questions covered level and focus of technical interest; level of interest in Maths and Physics when at school; level of engagement in typical, gender-neutral, and atypical play in childhood; level of engagement in household activities; level of joint activities with parents; parental SES; own educational level; level of ambition and life-view orientation; and pubertal timing. However, as the emphasis of this research phase is qualitative rather than quantitative, respondents were also asked about the motives and influences underpinning their initial, and any subsequent, career choice, and to give details of preferred and actual careers and, in particular, to discuss their perceived reasons for success or failure in accessing the career of their choice.

In support of these self-reports, items covering work-goals and sources and level of influence on initial career choice were included in the questionnaire. Concerning work goals, respondents were given a list of 10 conditions (with the option to add items their own) that they might consider important when deciding on the type of career to be pursued, i.e., interesting work, good income, promotion prospects, closeness of work to home, good benefits, possibility to work independently, pleasant work environment, responsibility for others, compatibility with family life, and chance to be creative. They were asked to rate each consideration on a Likert-type scale, where 1 = *very important* to 5 = *not important at all*. Respondents were also presented with a list of 9 possible sources of influence on their initial career choice i.e., father, mother, siblings, friends, school, government programmes, political party functionaries, other organisations - such

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<sup>1</sup>The instrument was pre-tested and refined, particularly regarding language, with native German speakers in the Institute for Developmental Psychology in Jena, Germany. The women used in the pre-test were not necessarily in atypical careers. See Appendix for Chapter 5 for the instrument as used.



as the Church, and role-models in the media, (again with the option to add items of their own) and asked to rate the influence of each on a scale of 1 = *not at all* to 5 = *very strong*. In the final section of the questionnaire the women were asked to share, in as much detail as possible, any personal work- or life-experiences they felt informative or illustrative concerning their work histories.

#### The sample and data gathering

The sample was one of convenience: for inclusion women had to be currently engaged in atypical work and to have been born and raised in either East or West Germany. It was also stratified in that respondents were classified according to the level of education and training required for their work, and to the region of Germany in which they were raised and had made their first career choice. This resulted in four groups: Professional (job required university-level education or training) and non-professional (job did not require university-level education or training) in East and West Germany. Two methods of contacting potential participants were used: First, a snowball approach whereby initial respondents were used to gain access to others (primarily via the Internet, and mainly affording access to professional women); second, by direct contact via telephone or letter to firms in East and West Germany. This latter was primarily used to find women working in non-professional occupations, especially craft workers, such as carpenters, painter/decorators, bus drivers and taxi drivers.

For both East and West professional groups, data collection was helped by details of the research project being placed on internet bulletin boards: Questionnaires could be sent and completed via email, as well as by the usual mailing procedure. Data collection was considered to be complete when a balanced number of respondents could be included in each of the four groups. As can be seen from Table 5:1 the West Professional group is slightly over sampled. This resulted in the questionnaire being completed and returned by the West professionals very quickly and it not being possible

to match this number of returns in the other three groups in the time allocated for data collection. In all, 99 returns were received: 4 were rejected because the occupations were not atypical (for example, a clerical position within an IT company), and 2 because the respondents had not been born and raised in either region of Germany. Of the 93 valid returns, 4 respondents had omitted some personal data, such as those related to personal status, having children, and pubertal timing, but as the main focus of this part of the investigation was on personal experiences and influences on career choice they were nevertheless included in the sample. (The German texts were translated by the author.)

	East		West		
<b>Professional</b>	<i>n</i> =21		<i>n</i> =29		<b>Professional</b>
	mean-age	40	35.5	mean-age	
	educational level	4	4	educational level	
	parental SES	15.5	12.5	parental SES	
<b>Non-professional</b>	<i>n</i> =22		<i>n</i> =21		<b>Non-professional</b>
	mean-age	36	29	mean-age	
	educational level	3	2.5	educational level	
	parental SES	12	11	parental SES	

Group definition: Professional = Job requires university level education

Non-professional = Does not require university level education (although women in this group may have this level of education)

Table 5:1: Sample information

#### Inter-regional comparison:

The intention here is first to explore the structured data for inter-regional variability i.e., to examine the extent to which women in atypical careers in the East groups differ from or resemble women in atypical careers in the West groups with regard to internal factors. (Particular note will be made of the factors used in the causal model in Ch. 4.)



Following some purely descriptive analyses of the data, an analysis of variance was undertaken for the East and West groups (acknowledging the fact that, as a purely atypical sample, the sample is not representative, so that findings concerning significance cannot be generalized nor assumptions made about the relevance for atypical career choice per se). The variables used in these analyses were constructed as for those used for the causal model in Chapter 4<sup>2</sup>. However, because of the nature of the investigation, and of the sample, all items used in the questionnaire were also included independently in the analyses.

	East	West
Parental SES ( <i>Parents</i> )	* higher	
Mother's job status	* higher	
Father's job status	** higher	
Maths and Physics rated favourite subject at school ( <i>Favsubj</i> )	** more often	
Physics rated favourite subject at school	** more often	
Play cowboys and Indians when young		* more often
Visiting a museum, theatre when young	* more often	
Cleaning and tidying at home when living with parents	** more often	
Doing the shopping when living with parents	** more often	
Joint hobbies with parents when young	* more often	
Life-view 'want to do something with my life, even if it means difficulties now'.	** agree more	
Life-view 'everything in life is chance'.		* agree more
Work goal – high income		** more important
Work goal – compatibility with family	* more important	
School an important influence in first career choice		* more important
Living with partner for the first time		* at a later age
Married	* more likely	
Having children	** more likely	

Table 5:2: Inter-regional differences \* significant at the 0.05 level \*\* significant at the 0.01 level

As can be seen in Table 5:2, two of the variable constructs from Chapter 4 (*Parents* and *Favsubj*) are found to be significantly different between East and West groups, although there are significant differences between individual items relating to the other model variables (except pubertal timing and interest in technology). For

<sup>2</sup> Additional items relating to gender-neutral childhood activities were also included in the questionnaire,

interest, these are also shown in Table 5:2 along with notes on the level and direction of the significance. Looking at the results, and bearing in mind the findings of the literature search and of Chapter 4, it is particularly noteworthy that a liking of Physics at school appears as a major inter-regional difference but not a liking of Maths. When the data are examined, Maths is rated equally highly in both regions (74% in both the East and West rated Maths as their *favourite* or a *very much liked* subject – rated 1 or 2 on a scale of 1-5 of liking). Physics, however, whilst rated as favourite or very much liked by 42% of the East group is only rated this highly by 28% of the West group. Further, 18% of the West group gave it the lowest possible rating compared to 0% in the East. The findings suggest that combining a liking for Maths and Physics to form the construct *Favsubj* may have contributed to its lack of significance in the causal model and that the factor related to atypical career choice is more likely to be level of interest in Physics than level of interest in Maths.

Because educational level was one of the strongest predictors of atypical career choice in Chapter 4, and as it was used as the criterion for the professional/non-professional groupings in this sample, the inter-regional comparison was repeated separately for the professional and non-professional groups. As can be seen in Table 5:3, women in the East, regardless of job status (and also, therefore, irrespective of educational level) are more likely to be married, to have helped at home in a routine task, and to have rated Physics at school as a favourite subject. The higher rating of income as a factor in career choice, and the higher self-rating as ambitious, however, is seen to be a feature of the West professional group, whilst the higher level of parental job status is related to the East professional group. Likewise, East/West differences in having children is now a feature of the East non-professional group. The differences in family status for the non-professional groups are particularly important to note in that

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and hence in these analyses.



they may support earlier discussions whereby it was suggested that the level of childcare provision in the East supported women's access to work in general, but indirectly facilitated access to female-atypical occupations.

	East professional	West professional	East non-professional	West non-professional
Physics as favourite subject	** more often		* more often	
Cleaning and tidying at home when living with parents	** more often			
Doing shopping when living with parents	** more often		* more often	
Mother's job status	* higher			
Father's job status	** higher			
Level of ambition		* higher		
Work goal – high income		** more important		
Work goal - compatibility with family	* more important			
Father as important influence in first career choice			* more important	
School an important influence in first career choice				* more likely
Married	* more likely		* more likely	
Having children			** more likely	

Table5:3: Inter-regional differences by professional/non-professional comparison

Two other differences highlighted in Table 5:3 reflect well known contextual differences between East and West Germany, primarily stemming from pre-unification policies in the East. Women in the East during the time of the GDR married and had children younger, on average, than women in the West and, as has been discussed in the previous chapters, had a high incidence of remaining in full-time work, even when their children were very young.

The significant differences seen for the East groups being more likely to be married and for the non-professional group in the East to have children than the West

groups is, therefore, unlikely to be associated with atypical career choice. However, as it is known that male-typical environments in the West have presented additional barriers to women with a family orientation (Tomlinson-Keasey & Gomel, 1997) so that the lesser likelihood for women in the West groups to be married, and for the West non-professional group to have children, may be related to their atypical career choice. This point is supported by a recent report on the lack of female top managers in Germany in which Bernhard Meyer (specialist in recruiting executives for the German investment banking industry) is quoted as saying, “Women succeed in business by sending a message to the world that they are not interested in a family” (Williamson, 2002). Nevertheless, an alternative explanation could be that, as the average age of the West groups is younger than that of the East (and given the finding that the West professional group had deferred entry into a first permanent relationship) the differences in marital status could also be a matter of timing. Comments by several of the women, however, indicate that the former explanation is probably more accurate.

#### Intra-regional comparison

The second part of the hypothesis suggests that, because atypicality itself can refer to a very divergent group of occupations (classified here as professional and non-professional occupations) significant intra-regional differences are expected in the factor profiles, work goals and influences of women who chose to work in female-atypical occupations. Following an analysis of variance for each region (with the same caveat given earlier concerning generalisability of results) significant differences were found between women in the professional and non-professional groups. These differences are presented in full in Tables 5:4 and 5:5, with the more important findings being discussed briefly.

Taking the East first (see Table 5:4) many of the significant differences seen here i.e., those relating to parents, to cultural and educationally-associated activities when



young, and to life-view, can be linked to the difference in educational level between the two groups. The higher levels of interest by the professional group in technical things when young, and in Maths and Physics whilst at school, is also likely to be related to educational level: These were highly valued areas of competence in the GDR<sup>3</sup> so that those with a talent in these areas were promoted and would have been 'encouraged' to study for their Abitur<sup>4</sup>. Therefore, those with a preference for - and higher competence in - areas such as Maths and Physics, would have been at an advantage in a system that limited access to the Abitur and selected students based on other criteria in addition to academic ability: This would have been even more visible at the time of the GDR's planned 'technical revolution', which began in the early '70s and would have been at its height when many of these women were in school.

In the causal model, against expectations, a significant relationship was found between early pubertal timing and higher levels of education, but only in the East. Here, the difference suggests that early pubertal timing is associated with professional careers i.e. (as was found in the causal model) with higher levels of education<sup>5</sup>. Repeating the procedure for the West in 1981, no significance is found for either group. It is beyond the scope of this work to follow this finding further. Nevertheless, as it goes against strong evidence from other contexts (e.g. America and Sweden) that early pubertal timing in girls is related to lower levels of education and hence to female-typical career/life paths (see Chapter 1 for literature details and Chapter 4 for a discussion of

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<sup>3</sup> As testified to by one respondent who discusses how, despite wanting to become a teacher, was directed into a career as a mathematician because of her exceptional talents in that field.

<sup>4</sup> The word encouraged is in inverted commas because students were not really given a choice in the matter. A fixed percentage of each class was designated to take the Abitur but the decision as to who it would be was not left to the students themselves per se. For example, a psychology doctoral student (17 years in 1988) explained how he had wanted to take advantage of the GDR's facility to combine studying for the Abitur with professional training but was told he should take the normal Abitur class because he was the best student in his class, particularly in Maths. When he expressed reluctance he was told simply that it was either this route to the Abitur and higher education, or none at all.

<sup>5</sup> When the causal model for the East in 1981 is modified so that educational level is removed and used instead to act as the basis for the creation of two groups (academic = Abitur level, and non-academic = all

why this might be seen in the East), it is compelling support for the hypothesis that context plays an overwhelming role in the atypical career destinations of women.

	East professional	East non-professional
Interest in technical toys when young	** more often	
Interest in electro technology when young	** more often	
Maths and Physics rated favourite subject at school ( <i>Favsubj</i> )	** more often	
-Physics as favourite subject	** more often	
-Maths as favourite subject	* more often	
Mother's educational level	* higher	
Father's educational level	** higher	
Father's job status	** higher	
Played dressing up when young		* more often
Went to theatres and museums when young	** more often	
Visited places of interest when young	** more often	
Read books in free time when young	** more often	
Approach to life – it's important for me to be different to those around me	* more likely	
Life-view is planful, efficacious, and open to experience ( <i>Lifeview</i> )	* more likely	
-Efficacious	** more likely	
Pubertal timing ( <i>Pubtime</i> )	* earlier	
Work goal – work close to home		** more important
Work goal – good benefits		** more important

Table 5:4: Intra-regional differences - East

With regard to the West, differences between the women in the professional and non-professional groups can be seen in Table 5:5. As in the East, many can be associated with the differences in educational level between the two groups, particularly those factors related to higher levels of parental SES and ambition. Differences also suggest a closer involvement with parents in areas related to career choice for the professional group, such as influence of father, greater likelihood of reading with parents and to have felt themselves to have been held as special by their parents. The differences in marital status, whereby the professional group are more likely to be married, is important to note, given the earlier reference to women aiming for high level (i.e., professional) careers to be under pressure to forego family commitments.

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other level of education up to Abitur) then the significance of pubertal timing for atypical career choice is also seen to be a feature of the academic group.



	West professional	West non-professional
Interest in electro technology when young	* more often	
Maths and Physics rated favourite subject at school ( <i>Favsubj</i> )	** more often	
-Maths as favourite subject	* more often	
Played doctors and nurses when young	* more often	
Played make-believe when young	** more often	
Read books in free time when young	* more often	
Cleaning and tidying at home when living with parents		** more often
Doing the shopping when living with parents	* more often	
Read together with parents	** more often	
Ambition	** higher	
Felt parents thought them special when young	** more often	
Father influential in career choice	** more important	
Parental SES	** higher	
Married	** more likely	

Table 5:5: Intra-regional differences – West

Before concluding this brief analysis of the structured data, a comment is needed on the scarcity of items where greater significance is found for women in the non-professional groups that is seen in both regions. The most likely explanation is linked to the known tendency for respondents with lower-levels of education to opt for the middle-ground and to check the middle option when presented with a multiple-option response set, as in a Likert-type scale.

### Personal accounts

Whilst the inter- and intra-regional analyses support the hypothesis that women in atypical careers do not form an homogeneous group, they tell us little about how the relationship between factors works, or about the true mode of operation of a factor. Neither do they help to determine what other factors, apart from those included in the causal model (whose explanatory power was quite low) are influencing typicality of career choice. Therefore, in order to ascertain what influences are working to determine typicality, and to understand the mechanisms involved in the interaction between the

internal and external factors determined by the statistical findings as important in women's atypical career choice, it is necessary to turn to the accounts of women who have made such choices.

When reading the individual accounts, several points are evident: One is the high number of women who report that their first career was not their preferred choice<sup>6</sup>, another is the number of women no longer in the career for which they had initially trained. Of particular interest for this work, however, is the number of women reporting that their first preference was not for an atypical career, and that they came to their current atypical careers later in life and by a variety of means. Principally, it would seem that chance, social change, material concerns, redirection in response to changes in the labour market, and personal development, played a key role in instigating their reorientation into atypical careers. However, before discussing this further, in order to provide a structure for the remainder of the chapter, the intention is first to examine the women's accounts to determine which factors they perceived as barriers and which facilitated their atypical career choice. Based on these findings, a typology of the factors involved in the women's career choices is presented and discussed in the light of selected personal accounts.

### **Barriers to career choice**

From the women's accounts, reasons for not attaining their desired careers can be divided into two main locations of influence,

- those stemming from factors pertaining to themselves (lack of qualifications, lack of real career focus, lack of ambition etc)
- those stemming from factors pertaining to others (influence of parents, direction by authorities, lack of financial support, gender discrimination etc.).

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<sup>6</sup> Of the whole sample, only 10 of the West professional (WP) group, 2 from the East professional (EP) group, 7 of the West non-professional (WNP) group, and 4 women of the East non-professional (ENP) group report having made the transition from school to the career to their first choice of career.



Factors pertaining to the self: First, several women admit that the career cited as desired when young was more of a dream career than a serious goal and that they had no concrete idea of what career to follow. In such cases the women chose to study or do something more general that allowed them to keep their options open. In all of these cases, career choice was not for an atypical career. A good example is a West professional (WP) woman who trained to become a pharmacist (an occupation approaching female-typicality in the West). As she says, “Because I was lazy and had to leave school early, my mother said I should just study something and then do what I want later. Pharmacist was pure coincidence, I knew however, that it would not be for the rest of my life...”. Another woman (WP) chose to study linguistics because, “all subjects appeared equally threatened by unemployment, therefore I selected the subject that would be: a) most fun and b) that I was best at school”. In a similar vein, a West professional who also studied linguistics as her first career choice, did so because it “seemed suitable for my aim at that time i.e. it offered enough space and flexibility, whilst not being deterministic”. None of the women in any of the other groups discussed their career choice in such terms.

The lack of the relevant level of education and/or qualification is given by some women as a barrier to their preferred career, for example, ‘I wanted to be an anaesthetist but my Abitur grades weren’t good enough’ (WP); “I wanted to be an electrical installer like my father but I didn’t have the qualifications” (West non-professional - WNP). In some cases women refer directly to their own attributes as contributory factors, such as a ‘lack of ambition’ or being ‘too lazy to study’. For example, “My ideal career was to be a teacher but I realised I wasn’t ambitious enough with my studies and [car mechanic] was then my preferred choice”(WNP). Another West professional woman similarly explains that her lack of ambition and putting her family first held back her career development in her earlier life: “The only person that held me back and got in my way

was myself. Earlier, I too often put my husband and family before all else and held myself back from focussing on my career”.

Barriers pertaining to others: Many women cite coercion from powerful external forces in their lives as directing them away from – or preventing access to – their preferred career path. Looking at this in detail there appear to be three main sources of such directing influences, two of which can, to a large extent, be defined by region: parental influence, (especially concerning financial support) in the West, and state direction in the East, and patriarchy, which overarches both regions.

Parents are cited as being a barrier to desired careers by determining the direction of their career, including withholding financial support for study or training: One women explains how she first worked as an industrial clerk, although she wanted to train as a music therapist, because of the influence of her parents: “Because my parents refused to finance my studies, I chose a broad training so that as many options as possible were open to me afterwards. After this, my career decisions have had nothing to do with my parents” (WNP). Another woman explains how she had to forgo her dream of studying art to become a secretary because, “They were looking for people and I had no free choice of career at home” (WNP). Similarly, one woman (WNP) explains, “After finishing school, it was my mother’s main wish that I didn’t learn a profession but that I stayed at home and helped on the farm. I had no other choice”. Some make reference to the problem of funding where the lack of parental financial support is suggested but not explicitly reported. For example, one women states that she had wanted to become a psychologist but instead became an industrial clerk because she was unable to study for financial reasons and because she ‘wanted to get away from home’ (WP). In a similar vein, one woman had to give up her studies because she became pregnant and had no support. She subsequently took a job as a secretary ‘because it was available and I needed to earn some cash’ (WP).



All the above examples are women from the West groups and no such comments are found for women in the East, as might be expected, given the GDR's system of education and training and policy of enforced guidance. Parents in the East, however, are shown to present barriers to desired career choices in a different, and sometimes unexpected way: Two women (East non-professional -ENP) explain how they were pressured into careers as painter and carpenter because they were the next generation in a family firm<sup>7</sup>. The consequences for the careers of the two of the women, both of whom wanted other, more female-typical careers (tailoress and to work with animals) are evident; "I had no brothers or sisters so that I had to learn the trade [painter/decorator] in order to carry on the family business into the 3rd generation"; "The firm belonged to my family since my grandfather, and via my father it came to me".

Many women in the East groups relate the extreme paucity of career options that in essence presented them with no choice at all. Whilst this applied to both status groups, it is more frequently reported by women in the non-professional group, for example, "I was given no other option – there was a very poor choice on offer" (draughtswoman who wanted to join the police); "Basically I had no other choice" (sales assistant who wanted to be a technician); "My ideal career was not available" (secretary who wanted to be a photographer); "I wanted to be car mechanic but there was no possibility to do that. In the GDR there was no chance to anything other than what I did" (hairdresser); "There was no other choice" (seamstress who wanted to be a veterinary surgeon). In some instances, not being awarded a place to study for the Abitur (something not necessarily related to intelligence or ability), or to get a relevant training place is cited; "I wanted to study medicine but for that you needed the Abitur, which I couldn't do. So I decided on the next best thing available and became a medical

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<sup>7</sup> It has to be remembered that these women are reporting on career choice during the time of the GDR, where the principles of communism did not embrace the concept of private enterprise. Nevertheless, some small family firms were allowed to survive

technical assistant”; “I was turned down from becoming a painter/decorator [higher status]. In a mood I decided to become a painter [general, working on building sites]”.

In the East professional (EP) group similar comments are found: “My possible career choice was extremely limited: I could choose from, farming, gardener, milk production, or working for the post office. For health reasons, I chose the post office” (wanted to be a mathematician); “For my main career choice – Architect – I had no real chance as study places were very limited in the GDR” (engineer for machine construction); “I was given only three choices – I wanted to take an Abitur with Professional Training (agricultural technician); “No chance to become a cartographer or Physics technician and [specialised draughtswoman] was the only thing that came anywhere near what I wanted to do and which was available in and around Dresden” (wanted to be an astronomer)<sup>8</sup>; “At high school I was enrolled in a special programme which offered training as a sound mechanic at the same time. This was a special programme offered by the state. There was no way to reject this offer, as so often in the GDR, it was a centralised programme which covered the whole of the educational system at that time” (wanted to study theatre science or drama).

It should perhaps be mentioned here that, although there is overwhelming evidence that young people had very little leeway in their career choice, the directing influence of state policy did not always result in a downwards, or even sideways, redirection from the desired career in terms of occupational status. In some of the accounts, as for example the one just given, there is a suggestion that, if a young person was identified as having a particularly high level of ability (especially in areas of value to the State, such as in Maths, Science, Technology or Sport) then they would be directed away from careers that would not maximise their ability. This is also supported

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<sup>8</sup> Some of these ideal careers may seem the result of career immaturity or lack of realism. However, many of these women do move to a career close to their stated goals at a later stage. In this example, she goes on, by a very circuitous route, to become an astrophysicist – full account given later in this chapter.



by the account of one woman (EP) who reports having wanted to become a Maths teacher but whose extreme ability in the subject lead her to win the national Maths Olympiad<sup>9</sup> and who was directed into university-level work. As she says, “I came then rather coincidentally to a career in Mathematics – through success in the mathematics Olympiad, which was really a big and very significant event in the GDR, and which had career consequences”.

State-originated barriers were not, however, totally confined to the East. Although there is nothing in the women’s reports in the West to suggest that the state intervened directly in their work options, given that funding procedures and economic resources at the disposal of individuals has much to do with government policy, then the inability of some women in the West to study for financial reasons, or to train for a particular career through lack of training provision, could also be seen a consequence of government planning. Theoretically, all education and training is free in the West, as it was in the East, but according to some women, circumstances certainly meant that lack of funding or training provision was an issue. For example, “I was a lone-parent and had to abort my studies so that I had no professional training. I took a position as a stenographer in order to earn more cash” (WP); “Originally I wanted to be a carpenter – but in our area there were no such courses for females. I was able to find a place on a special project called Young Women in Male Careers run by the local Chamber of Industry and Commerce to train as an electrician” (WNP). The examples given earlier in the context of lack of parental support could also be included here.

In the literature search, patriarchy was discussed as one of the main external factors influencing the typicality of women’s career choice. It is also worth recalling the debate concerning the relationship between patriarchy, capitalism and

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<sup>9</sup> Mathematics Olympiad was a contest between students in mathematics. Such contest were run at various levels, starting at class level and ending at national level. The three top students went through to the next level until there was a national champion.

socialism/communism, whereby patriarchy has been linked to capitalism and its mode of production, and was not, therefore, expected to be a feature of socialist/communist societies. In the women's accounts the perceived effect of patriarchy is referred to several times, both directly and indirectly, and in both regions. It is rarely referenced as having formed a barrier to entry to an atypical career but the experiences related by the women describe gendered attitudes and behaviour toward them as women that can be taken to indicate the existence of such barriers, and to show the obstacles women had to overcome in their everyday work. One frequently occurring reference is to the women feeling they were passed over for promotion or selection – for example - “Women have few opportunities for advancement in the technical field, because the decisions over promotion are often made by men (at least it seems as such to me)” (WP, IT engineer) and “It was stressful to have to prove again and again that I am better than my male colleagues. I remember that I was disadvantaged when applying for my ‘Volontariat’ which made me very angry: I was the only one with a professional qualification as photographer, but I was the last to get a placement” (WNP, film/TV camera operator).

Another manifestation of patriarchy is that men's work is accepted as automatically superior to their own, pressurising them (as also seen in the previous comment) to work harder/longer/better than their male colleagues. For example, “ I should also say, in my experience, woman have to work harder and show better results” (WP, IT engineer); “... lack of acknowledgement, appreciation –decisions taken over my head, result in depression and an inferiority complex. To avoid such things and to improve my self-confidence, and to find some peace, I work longer and harder than my male colleagues” (EP, engineer for appliance technology), “I feel under constant pressure work-wise to prove myself and set ever demanding targets” (EP, engineer for machine construction).



In conclusion, the two following accounts from East professional women summarise the effect of patriarchy and of the problems women working in a male environment may encounter:

- In everyday working life I usually feel as somewhat 'exotic', which is part advantage part disadvantage. The flow chart of contact/co-operation tends to follow a set pattern. First is the "what does SHE want here? Does SHE think she can tell us something?" (One is frequently registered only as decorative accessory at this point.) The test phase follows, usually harder and more critical than for male opposite numbers. If one has been successful, acceptance and acknowledgement normally follows- this stage is usually very good and co-operation is possible (one can frequently achieve more/solve more here as a woman – a good example is construction supervision). In everyday working life one also finds that practical/craft skills are observed with astonishment, sometimes a little derision, and sometimes downright denial - only men can do that! (EP, Machine construction engineer).
- For women in occupations that are predominantly male dominated, my experiences are as follows: If the woman has the status of a learner and their male opposite number has authority over her, then you are shown a great deal of helpfulness and friendliness; the support is very good: This support can sometimes be dependant on the appearance of the woman. In academic occupations (rather, in theoretical work) it is completely normal that the quality of the work performed is decisive in the recognition of the authority of the woman. In the more practical spheres of activity one must eliminate prejudices. To do this one must be better than the men doing the same work. If this succeeds, however, one gets more applause than the men. For example: In the case of a male technician people expect that he will work well, in the case of the female technician, people are first sceptical and then enthusiastic (this refers particularly to experiences as sound technician with live concerts and not so much in the studio or radio and television). Generally if one works as a woman in a male domain, one will always be treated

somewhat differently – by both men and women (EP, acoustics engineer).

### **Factors motivating and facilitating atypical career choice**

The role of parents: In the previous chapter, parents were seen to be instrumental in the typicality of their daughter's career choice through the influence of their own level of education and job status (SES). In the accounts of the women in this sample, parental influence on career choice can be seen by direct reference to their parents, and can be inferred from the similarity of a parent's occupation to that of their daughter, as well as being estimated from the ratings of the influence of each parent.

In the West professional group a direct relationship to the career of their parents can be seen for several women. First and foremost, the relationship is to the occupation of their father, although only 24% rate their father as a *very important*, or *important* influence on their first career choice. For example, two women working as mathematicians have fathers who are also mathematicians, and four women working as engineers have fathers who are also engineers in the same or related fields. This relationship is sometimes openly acknowledged, for example, one woman explains that her choice to work as an IT engineer stemmed from “... an interest that came originally from my father's work as an electrical engineer”. In other cases, whilst there is no direct link between father's and daughter's careers, there is nevertheless a close association, as in the case of the women working as a mathematician whose father is a physicist. In the East professional group only two women make a direct reference to fatherly influences, although 25% of women in this group rate their fathers as having been *very important* or *important* in their first career choice. In both cases, fathers and daughters are engineers, although not in the same branch of engineering. In one case, the father's influence is seen somewhat negatively so that the choice to become an engineer is said to have



resulted from 'pressure from my father' who was a professor of engineering, adding that she had wanted to become a doctor or psychologist.

In the West non-professional group there is little reference to fathers having been influential in their daughters' career choice<sup>10</sup>, and almost no similarity can be seen between fathers' occupations and those of the women themselves. In fact, in only one case can any direct link between the career of father and daughter be seen (both being in machine construction). In the East non-professional group, however, several of the women have careers related to their father's occupation (i.e., carpenter, supply installation, and painter/decorators), and 28% of the women rate their fathers as *very important* or *important* in their first career choice. Further, following reunification, (when, even given the dire unemployment situation for women, they were freer to chose their occupation) two women in the East non-professional group moved into careers that reflected those of their fathers (both of whom were lorry drivers) one woman became a bus driver, the other a taxi driver (both male-dominated occupations in the GDR).

The role model of mothers has been hypothesised in earlier research as significant in terms of women's career orientation, with various degrees of success and with contradictory findings (see Chapter 1) but overall, research has seemed to suggest that it is mother's employment v. adherence to the traditional domestic role that is influential. With regard to mothers as gender-role models in this sample, most respondents report their mothers as in, or as having been in employment, and few report their mothers to have been full-time housewives (those that do are all from the West). However, several women report that their mothers either had been housewives but were now employed, or vice versa: Primarily, women reporting the former situation are from

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<sup>10</sup> Only 10% of this group rate their father as having been *very important* or *important* in their choice of career.

the West, and those reporting the latter, primarily from the East. This fits with the discussion in Chapter 3 whereby labour market developments in the West were felt to have resulted in more women entering the labour market, whilst the same areas of development in the East have resulted in women leaving employment.

Of particular interest for this work is that very few women in either region report having mothers in atypical occupations (something which could have been expected particularly in the East), the majority being in gender-typical occupations, such as office work, secretary, telephonist, nurse, hairdresser, cleaner, florist, post office worker, textile industry worker, sales, seamstress, care assistant, primary school teacher, office and administration. In fact, just two of the women in the West professional group and two in the West non-professional group had mothers in atypical careers i.e. doctor of forensic medicine and mathematician, and chemical engineer and chemical laboratory manager, respectively (although this latter occupation is gender neutral in the West at lower levels of worker status). None of the East professional group's mothers can be considered as having worked in atypical careers, but two are given as Maths teachers (one a teacher of Maths and Physics) which, although not atypical, may have had some relevance for their daughters' choice of careers as engineers. In the East non-professional group, only one mother worked in a male-dominated area and that was in the metal industry as a lathe operator, which actually was a female occupation in a male domain (this mother's job in 2001, i.e., after reunification, is given as secretary).

With regard to perceived maternal influence on career choice, few women mention their mothers and only six women in the entire sample have a first career resembling that of their mother. These are equally distributed between the regions, and most do not relate to atypical careers: two women whose first careers were in office-related work (administration and secretary) had mothers engaged in office work; and one woman whose first career is given as tailoress had a mother working as a



seamstress. Two mothers are in Maths-related careers and their daughters have also entered first careers where Maths is primary to their career choice – as a Maths teacher and in information technology. Another woman who became an electrical installations technician had a mother engaged in electrical assembly work. Nevertheless, despite this lack of mother-daughter career association, and lack of any direct reference to them in their accounts, approximately 30% of all (except the East professional group) rate their mothers as having been *very important* or *important* in their initial career choice: In the East professional group, only 10% rate their mothers as *important*, and no woman rates her mother as a *very important* influence.

The role of childhood play and interests: In the causal model, typicality of childhood play was one of the few factors significant in at least one of its proposed relationships in all contexts. In support of this, several women make specific reference to the role of play or childhood activities in their later career choice. The play referred to is both gender-neutral and atypical: For example, an engineer (EP) for appliance technology says she chose this particular field of engineering, “...because it combined my early childhood joy of sticking and pasting with the promising area of electronics”. A direct link between atypical play in childhood and later atypical career choice is seen clearly in the accounts of two other women: The first, a building-interior construction worker (WNP) simply comments, “I loved construction-type things ever since I was a child”. The second, a long-distance bus-driver (ENP) who had wanted to be a car mechanic but had had to work as a hairdresser in the GDR, demonstrates the link between atypical play and career choice rather more fully:

I learned hairdressing because there was nothing else. In the GDR there were not so many occupations that one would happily learn. I wanted to do something that was not typical for a young girl. It must have been because my parents wanted to have a boy so that I was educated in such a way. When I was young I spent a lot of time with

my father tinkering and making things in the cellar, whereas other girls played with their 'puppenwagen' (dolls prams) and dolls. Thus came my career aspirations.

Other activities, particularly hobbies when young, are also mentioned as motivating career wishes, although only one woman (WNP) manages to turn her childhood hobby of photography into a career (camera operator in films and TV work). Nevertheless, these reports lend support to the previous findings that childhood play and activities when young can be influential in later career choice, and can be an indication of desired career typicality.

Interest in Maths and Physics: The relationship between a female's higher levels of interest in Maths, Physics and technology and the greater likelihood of an atypical career, has been discussed throughout this work, and in the women's accounts, an interest in these fields is often cited as the prime motive underpinning their atypical career choice. The highest incidence of this is found within the West professional group where 55% make specific reference to one of these subjects. Some refer to their 'love' of Maths or Physics, others cite an 'interest' or 'fascination' with technology, or wanting 'to work with computers'. However, in the East professional group, only 24% make any specific reference to these areas as having been instrumental in their career choice. In the non-professional groups references to an interest in Maths and Physics is much lower and only one woman makes a direct reference to either subject; "When I was a child I wanted to know how everything worked and what things looked like inside. In Physics we learned the principles of the combustion engine and I was hooked" (WNP). An interest in technology, however, is given as pertinent to the career choice of several women in these groups: For example, "Great interest [in car mechanics], obsession with technology" (WNP); "I was always interested in technology"(WNP); "Technology has always interested me" (ENP).



Lifeview: In their accounts of work experiences and motives for career choice, many women indicate that personality factors related to the construct *Lifeview* (representing approach to life and degree of planfulness – for details see Chapter 4) were pertinent to the paths they took, or attempted to take. There are, for example, indications that many of these women (primarily those from non-professional groups, especially the West) were looking for something different, something other than female-typical careers that are described in various terms as ‘boring’: For example, “This was something unusual - no one else in school chose [machine construction]” (WNP); “I wanted to do something that was not typical” (ENP); “Always interested in things that are unusual – varied work – varied work times – not boring”(ENP); “Better than working in an office” (WNP); “A completely new, relatively unknown activity (no accurate conception over [technical drawing]) before choosing the subject” (WNP); “Monotony of my other work. Curious about something new” (EP); “I wanted to avoid traditional female occupations, I wanted to do something special” (WP). One woman in particular talks of the boredom she had felt in the very traditional female-typical career that circumstances had compelled her to take.

My experiences: 13 years as a secretary equalled 13 years hibernation!  
The change of occupation into a more creative area meant upwards mobility and thorough personal development. When I was 29 I started my apprenticeship as a painter [decorator] and I was never so happy as that.

Associated with this is the almost unanimously expressed need for work to be interesting and percentages rating this work goal as either *very important* or *important* in their choice of career range from 86% for the West professional group to 100% for the East non-professional. Consequently, several women express the need for their work to be rewarding in a non-material, almost ‘spiritual’ way: for example, “It made me happy to work with my hands and to be a craft worker” (WNP); “I always wanted to have a job

where you can see the results of your work (ENP). Other qualities expected of their work was that it should bring happiness; good relations with other workers; able to meet different people; opportunity to learn something new; varied work; and satisfying. The possibility to work independently and to be creative in their work is also rated by the women as an important consideration when choosing a career, with percentages rating independence at work as *very important* or *important* ranging from 86% (WP) to 95% (ENP) and rating creativity as *important* ranging from 79% (WP) to 86% (EP and WNP). Many women also discuss their employment as a means to independence and offering independence and self-fulfilment, for example, "I always wanted to achieve more in my life. After the Wende [reunification] I made myself independent and opened my own business on the first March, 1990" (ENP), and from a West professional, "As a bank clerk I wasn't accepted because I was over qualified, I could have got a place through my relatives but I rejected this because I didn't want to be obliged to succeed or to be beholden to others".

In a related but somewhat oppositional way, many of the women present themselves as motivated by a more extrinsic approach, whereby employment is seen more as a means to a material, as opposed to a non-material or 'spiritual' end. These women are highly planful, weighing up their chances with regard to the labour market and the ability of their prospective career to provide their desired material needs, although often accompanied by some of the more intrinsic motives suggested earlier (but quite obviously secondary in influence). Where necessary, earlier career plans are discarded when there is evidence that the path being followed is not going to provide the required returns. This is not as harsh as it may sound: Often the return required is for financial security rather than a large income per se (although this is also cited several times) and most often this need for financial security is related to the women's family responsibilities. For example, one respondent (EP) working as a mathematician gives as



the reason for choosing a career in mathematics instead pursuing her 'dream career' of botanical collector as wanting "to have an occupation that guaranteed economic independence for me and my children, but which was also useful for society". Similarly, a woman from the West professional group comments that her career as machine construction engineer gives her "...the security I seek and the possibility to change things and influence the future". Another West professional reports that, although her ideal career would have been artistic, a realistic appraisal of the labour market made her look in a different direction – "I wanted to have a realistic chance on the job market and the IT industry seemed suitable to me in this regard, that is, my reasons for an occupation in IT are mainly pragmatic". Others were in the same vein; "Maths was always my favourite subject and I love logic. Besides that, the employment chances looked good for IT"; "I always had an interest in technology and there were good future prospects in this field"(WP).

As can be seen, most of these comments come from West professional women. This regional difference is also born out by the structured data, where the East professional group also gave the work goal of a good income the lowest rating of all groups, with 48% rating it as *not very important* or *unimportant* (compared to just 17% of the West professional group). This could reflect ideological differences between the regions, as well as social acceptability causing this factor to be underrated. In support of this latter point, in several of the reports women actually mention the importance of having a good income, yet do not rate it as *important* in the battery of items concerning work-goals. Perhaps it is easier to acknowledge the desirability of a good financial reward when able to explain the reasons for the apparent need, particularly in a society where individual material interests had been seen as anti-social and against the collective good, and as the epitome of capitalism.

In the inter-regional analyses reported earlier in this chapter, a significant difference in reported levels of ambition was found between the professional groups. When the structured data concerning ambition are analysed for frequency, it shows that 93% of the West professional group rated themselves as either *very* or *pretty ambitious* (scores 5 or 4 on a 5-point scale) compared to just 62% in the East professional group. However, 63% of the East non-professional group also rated themselves as *very* or *pretty ambitious* compared to just 53% of the West non-professional group. However, despite these high self-ratings, in their personal accounts, ambition is rarely referenced directly. One woman who does gives her reason for choosing to become a machine construction engineer as follows:

[I chose this occupation] as an alternative to teaching or Biology, the first of which didn't interest me and the second which had no future. Also – good prospects and likelihood of getting a job when studies were finished. Also, why not do something different? Ambition!

And another West professional comments how early in her life she was, “....very conscientious and ambitious, had enormous expectations of myself, therefore fears of failure, fear of exposure ('fear of shame') etc”. In the East groups, ambition as such is not mentioned but one respondent comments that she “wanted to aim for something higher, but where exactly wasn't important” and comments that she chose her second career (IT technical consultant) because of “better chances of success and a better future”(ENP).

Effect of the Labour Market: Many women show clearly that their awareness of the labour market situation played a strong role in the focus of their career choice. Whilst this applies to some women from their first career choice, for others it is more related to changes in the labour market and the risk of, or in response to actual unemployment, involving changing careers – usually moving from gender-neutral or typical occupations to atypical. For women in the West professional group the move was most



frequently into information technology. Many had the necessary Maths background and this combined with a good offer of training courses, and the fact that this was an area with staffing shortages and offering good pay, made it an accessible and desirable occupation.

Whilst not commented on directly as a consideration behind choice of career, in many of the comments concerning post-reunification career choice, women in the East (particularly the professional group) indicate an awareness of market influences, for example mentioning the importance of 'a favourable job market prognosis'. In the East non-professional group, unemployment following reunification is given as the specific reason for entering a new career, although it can be deduced from the nature of the changes in careers that this was also the case for several of the other women in the group. For many it seems to have been a positive experience, allowing them to enter careers that suited them better in terms of the nature or direction of the work – such as allowing them to be more expressive. For example, "My first career was boring and monotonous. At the end of the day, in this career I can see what I have done" (ENP). However, for some, the choice of career following reunification was also 'less than ideal'. Many previous areas of employment, and hence, areas of training and qualification, simply ceased to exist, as this former sports teacher working as a computer and media technician explains:

Unfortunately, after reunification the school-sports association was dissolved and limited career experience was a great obstacle - performance sport has little meaning. Sport associations are hardly supported financially by the state. They cannot employ full-time coaches, only people through ABM [state sponsored work projects] measures from the labour office. The future does not look any better. Thus my dreams of becoming a coach will probably come to nothing" (ENP).

Circumstantial reasons: One other factor that instigated the atypical career choice of several of the women was chance or coincidence – very much the result of chance meetings of, ‘being in the right place at the right time’. For one woman (WP), both her careers resulted from chance happenings: Her initial vocational choice was to become an anaesthetist but she didn’t reach a high enough grade in the Abitur to make this a reality. After a chance meeting with a friend who was a weather service technician she decided to study meteorology and became a meteorologist in the area of environmental protection doing medium range modelling. However, as there was no chance of a long-term secure job in this area she decided to retrain for electronic data processing (EDV). As she says, “My next career was also a coincidence: Whilst training for EDV, which I did at evening school in order not to be unemployed, I met someone from Xerox who asked me whether I’d ever thought of becoming a systems analyst. Given that this would be much better than my retraining for EDV, I took the chance! From this I progressed to become systems support manager and am now consultant.”

Summary: These accounts give an indication of the complexity of the factors involved in career choice and underlines the intricacies of the interaction between internal and external factors. They also reinforce the earlier findings that women who chose atypical careers are not an homogenous group. In addition, it supports the conclusions drawn from Chapter 4 in that no one single factor appears dominant in facilitating, or forming a barrier to such choices. Nevertheless, certain patterns can be seen in the motives and direction leading to the atypical career choices of the women in the sample. Primarily, two points of reference emerge; First, the locus of influence lies either with the women themselves (i.e., internal factors are strongest) or with others (i.e., external factors predominate). Second, the focus of career choice is either on a specific attribute of a particular occupation because of its intrinsic value for the individual, or on an extrinsic (materialistic) need that a wide variety of occupations could fulfil.



## Typology of Atypical Career Choice

From these points of reference it is possible to ascertain four modes of atypical career choice. First, the locus of influence is internal and the focus on a specific area of work, i.e., the atypical career choice of some women is primarily driven by their own internal or intrinsic influences, whereby they are driven by a particular interest, fascination or love of a particular occupation or subject, such as Maths, Physics or technology. They often indicate that this interest arose very early in their lives, either in childhood or at school. In their perception and choice of occupation they see the potential for fulfilling fundamental personal needs such as happiness, joy and satisfaction (Draper & McMichael, 1998). Unless a major life-event dictates otherwise (as in reunification) it seems that such career choices are likely to be enduring.

Second, focus of career choice is again a specific occupation but the locus of influence is external to the individual, i.e., the women are directed into an occupation by the wishes or intervention of others. In some cases this is the distant, abstract concept of 'the state' that presents them with no real choice of career, in others it takes the form of parental intervention (as in control through withholding funding) or where parents act as a powerful, pressurising influence.

Third, the locus of influence is internal but the focus is on a particular benefit to be derived from work that any one of a variety of occupations could provide, i.e., the motive behind career choice is extrinsic (materialistic)<sup>11</sup> with motives for career direction based strongly on the rewards and benefits that the job is expected to bring – where these expectations are not realised, career redirection is pursued. This is not just in terms of salary, but also more abstract concepts such as wanting a career with

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<sup>11</sup> The term 'materialistic' was first used but because of the negative connotation of this word the term extrinsic is used instead. The intention is to convey that the focus of career choice lies outside of the actual career itself, being more focused on a material benefit derived from the work, such as location, financial rewards, etc i.e., the opposite of intrinsic.

prospects, choosing work based on the provision of financial security, particular working hours, or its location.

Fourth, the locus of influence is external and the focus is non-specific i.e., the atypical career choice of some women is the result of serendipity, of chance meetings and are purely circumstantial. In other words, atypical career choice is unplanned and not the result of particular efforts or searches in any direction, although they may reflect a basic career orientation. These four spheres of influences can be set out as follows:

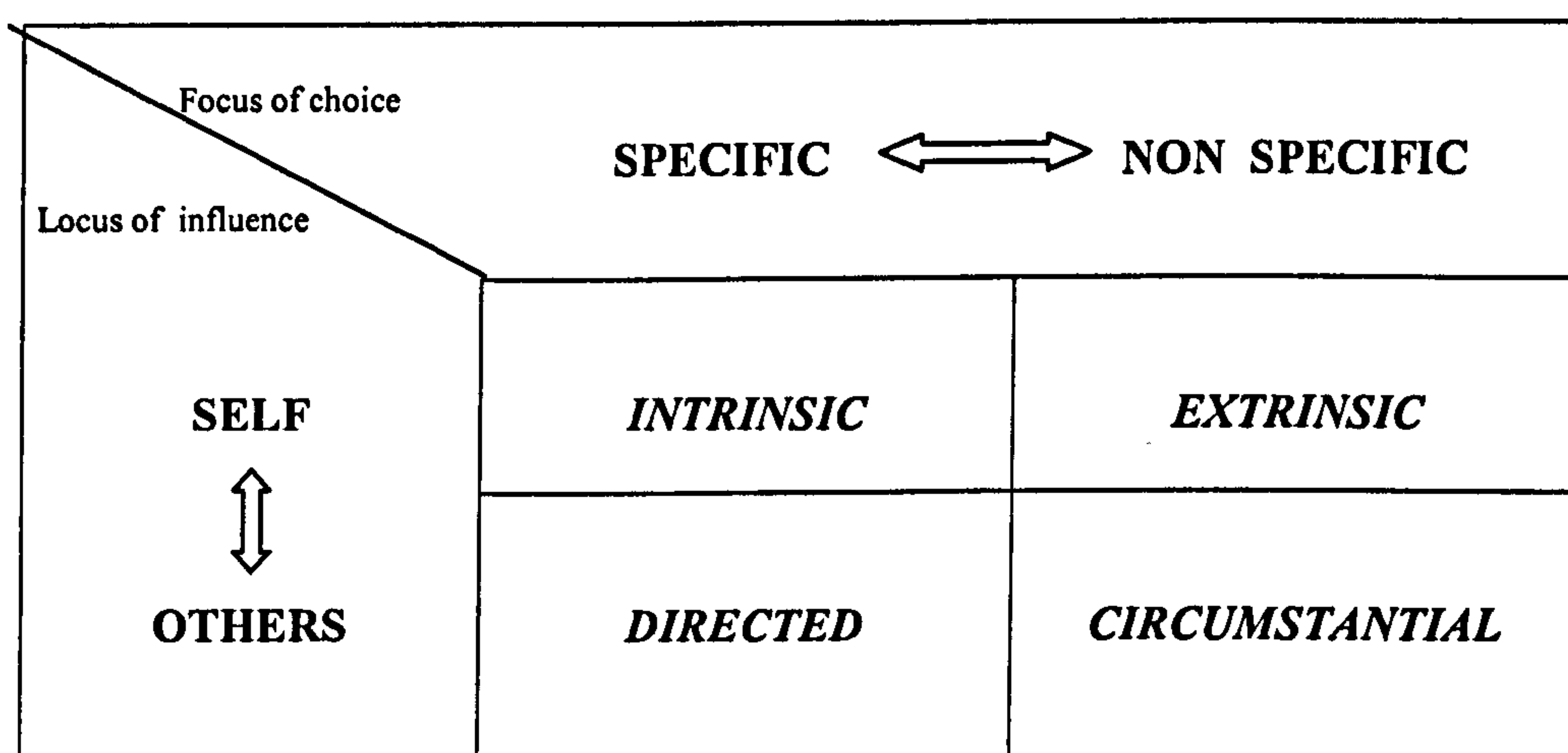


Diagram 5:1. Typology of career choice typicality

In order to ascertain the principal locus of influence and focus of choice, i.e. to determine the predominant motivating influence in each woman's initial career choice, the free text in each account was key-worded whereby words and phrases pertinent to each type of influence were highlighted: In this way, expressions such as 'pure interest', 'a love of ' were taken to indicate intrinsic motivation; 'good prospects', 'safe bet for the future' to show materialistic/extrinsic motivation; 'had no other choice', 'no other chance' to indicate external, directed influence; and 'by coincidence', 'offered the chance' to show circumstantial influence. However, as with other typologies related to occupations and/or personality types (such as Holland's, Vocational Preference Inventory, 1985, and the Myers-Briggs Type Indicator – see Sharf, 1992 ) in most case



the key words revealed more than one motivating influence. Where this was the case, the structured questions concerning career influences and work goals were referred to and the rating of appropriate items, such level of importance accorded to income or work benefits, taken into consideration. By this process the predominant locus of influence and focus of choice could be determined.

The motives and circumstances behind any second career choice were also coded and respondents again assigned to one of the four categories. As can be seen from Table 5:6, differences are found by region and status: The West non-professional group would appear to be largely intrinsically motivated in their choice of career, being guided more by the work itself, such as desire to be creative, to work with a particular subject or artefact, than by material benefits. The West professional group, however, appears to lay greater emphasis on the extrinsic, material benefits their chosen career can bring, for example in terms of higher income, but also in terms of potential for promotion and advancement. Both the East professional and the East non-professional groups discuss their initial career choices in language that shows they had little choice, so much so that approximately half of each group indicates being directed into their first career by external factors. Overall, circumstance, chance or serendipity, didn't play a strong role in first career choices, as might be expected, given that first career choices are more likely to be determined through structured programs at school and to be influenced by parents and other bodies, whereas later career moves may be more open to chance. In fact, chance seems to have been quite evenly distributed across the groups, with only the East Professional group reporting almost no effect.

Almost 60% of the sample report being in a different career at the time of data collection from that which they had initially learned. As is to be expected, given the disruption in the labour market in East Germany following reunification, the highest percentages are found for the East groups (EP = 60%, ENP = 67%). However, the West

professional group comes close to these percentages, and indeed many of these women discuss changing careers because of developments in the labour market whereby they felt a need to retrain or reorient themselves into a career with a more certain future. The most stable group is the West non-professional group.

Focus of choice Locus of influence		SPECIFIC ↔ NON SPECIFIC	
		INTRINSIC	EXTRINSIC
SELF ↕ OTHERS	WNP	<u>52%</u>	WNP 10%
	ENP	31%	ENP 5%
	WP	31%	<u>WP 35%</u>
	EP	29%	EP 14%
		DIRECTED	CIRCUMSTANTIAL
	WNP	24%	WNP 14%
	ENP	50%	ENP 14%
	WP	20%	WP 14%
	<u>EP</u>	<u>52%</u>	EP 5%

Diagram 5:2: Typology of atypical career choice: Breakdown of sample by influences on first career choice

As can be seen from Diagrams 5:2 and 5:3, the locus of influence on career choice changes over time, and is strongly linked to the context within which the career decisions are made. Women in the West were freer in their initial career choice to be influenced by both their intrinsic and extrinsic needs, whereas women in the East, whilst also demonstrating the effect of these influences, were primarily influenced by the directing forces of others. Things alter as time brings change in both micro and macro contextual factors, enabling personal change and redirection. In these later career choices, almost no decisions are attributed to direction from others (especially



noticeable in the East) whilst choices stemming from circumstantial events increase dramatically.


Focus of choice		SPECIFIC ↔ NON SPECIFIC	
Locus of influence	SELF	INTRINSIC	EXTRINSIC
		WNP 30%	WNP 30%
		<u>ENP 46%</u>	ENP 15%
		WP 35%	WP 35%
		EP 29%	<u>EP 36%</u>
OTHERS	OTHERS	DIRECTED	CIRCUMSTANTIAL
		WNP 10%	WNP 30%
		ENP 0%	<u>ENP 39%</u>
		WP 0%	WP 29%
		<u>EP 14%</u>	EP 21%

Diagram 5.3: Typology of atypical career choice: Breakdown of sample by influences on second career choice

There follows a selection of the full text accounts subsumed under each of the four types of career choice influence. These accounts amply demonstrate the complex nature of atypical career choice, and reveal the multi-faceted interaction between internal and contextual factors.

### Intrinsic

The group most motivated in their first career choice by intrinsic needs has been shown to be the West non-professional group, and in subsequent career choices by the East non-professional group. The following is the report of a 54 year old West Germany women (WNP) who started her career as a car mechanic and then retrained to become one of the very few female train drivers working for German Rail. Her parents were both employed in gender-typical occupations: mother as hairdresser and then care

assistant; father as fisherman. In her report she discusses how her personal circumstances later in life influenced her career direction, but she also indicates the influence of a personality where curiosity, strength of purpose, and a need for fun play a major role.

### ***Respondent 28***

Already when I was a child I wanted to know how everything worked and what things looked like inside. In Physics we learned the principles of the combustion engine and I was hooked. I suppose my ideal career when I was young was to be a teacher but I realised I wasn't ambitious enough with my studies and [car mechanic] was then my preferred choice. After I finished my apprenticeship I got married and had children but the marriage failed and a new beginning was urgent. I chose my second career [train driver] quite simply because:

- ◆ I was qualified
- ◆ I was curious –could I still do something?
- ◆ It was my 2<sup>nd</sup> application and I was successful

After school I had decided to become a mechanic and once I had decided this my father helped me to find a training place. So much attention from him just for me – a completely new experience. I was always able to convince bosses and superiors by my work, so getting a place was not too difficult. My job was simply fun, and I was really happy in the training school. After training I went to an industrial company and worked first on the production line. After this I started evening classes to enable me to get out of shift work. After finishing evening classes I had the qualification of 'Werkmeister' for mechanical engineering and service technology and I led a small department as a foreman. Then the usual followed: Dog, Children, Divorce, new beginning.

Again I was lucky, my second application to the railways [German Rail] was successful. Now I am an engine driver. Work-wise it is the same as everywhere: Opponents cannot be convinced anyway - I have already convinced the sceptics: There are friends enough. All the same, your questions over the future and my life plans are very difficult for me



to answer. Only God knows what will happen day to day and I never planned my career as such. My occupation is genuinely fun, I can even say it brings me joy, but I do not have any intentions for promotion. I am content as it is. Work brings me cash, and everyone needs cash to survive, so fun at work is a beautiful addition. I also must admit, when I read your questions again, it makes me happy to be doing something that not everyone does.

As already discussed, the women motivated by intrinsic needs appear less likely to change jobs. However, German reunification enabled some women who had been prevented from working in their occupation of preference to get work better suited to their needs. The following is the account of one of the few East German women in the sample who was able to work in the area of her passionate interest –vehicles and driving – both before and after reunification. She also indicates that she has strong materialistic motives following reunification but combined with other data she provides, it is clear that her principle motive is her love of driving.

*Respondent 93*

I grew up in an agricultural community and in the holidays (summer especially) I was able to do odd jobs and got to be fascinated by vehicles. When I was 16 I went into mechanised agriculture dealing with the tractors and other machines. I can't say it was my idea of an ideal job but I enjoyed it. From there I was able to get into working with lorries and to improve/extend my skills so that I moved from the fields to the roads. Apart from motor bikes and special vehicles, such as excavators, I drove everything, lorries, buses, etc.. After the Wende I was able to stay involved with transport. This is good because one doesn't stay young for ever and the job market is changing so. An ideal job? What job is ideal? At least in my current job [bus driver] I can drive, and I love to do that.

As a women in public transport one lives in a man's world and one has to be very careful and must conscientiously maintain personal principles in all situations. Because I've also got my taxi drivers licence and I know

the scene, I'm able to take care of myself and can see that I'm not taken advantage of.

The only thing that really matters for me is being able to afford a decent and normal life for my son and myself. You have to understand that I am tall, slim, a natural out-of-doors type that most people take for being much younger than I actually am – and I use this to my advantage! I smoke a great deal and drink lots of coffee but I don't like alcohol. To counteract the stress, hectic life, and problems on the roads, I work in my garden and I'm always very happy when winter is ended. I'm fascinated by people like yourself but I'm much too scruffy to work in an office.

The following is the account of a West professional woman, age 41, working in software development. Her mother fulfils the traditional role of a married women in West Germany with no learned occupation (occupation given as 'housewife') and her father trained and still works as an industrial clerk. As is evident from her comments, her prime motivation for her career choice was an intrinsic love of Maths and the need to use logic. However, she supports this reason for her choice by saying that working within IT also fulfilled the secondary criteria of offering a career in a developing sphere of work. Later in her dialogue she mentions that her eventual position was something that 'simply just happened'. Thus, although the prime driving force was her intrinsic love of Maths, both materialistic and circumstantial elements were involved.

***Respondent 25:***

Maths was always my favourite subject and I like logic. Besides that, the employment chances looked good for IT. In this way [information technologist] was and still is my 'ideal' career. I still work in IT but now I'm the scientific leader in software development. This can be roughly divided into 10% IT, 30% commercial economics, and 60% psychology! I can really say that this is my 'dream' job.

The best experience of my career was the two years in which I had a female boss (American). She gave me courage and self-assurance. I



have to push myself to seize chances because I always think that I can't do it. Normally I force myself to take the next step upwards (to climb the ladder). I saw the same with many colleagues: we are totally uncertain and thought the others (particularly the men) were better. Why were we so uncertain and unsure? Objectively there's no reason for it, there's just something inside of us that we do not respect ourselves enough. This is particularly noticeable for me in evaluation discussions: one says something positive to a woman, and she then comes back with 10 reasons as to why she is not at all so good. If one tries to point out just one development possibility to a man, then he comes back with 10 reasons as to why he is nevertheless soooo [sic] good. I'm very lucky to work for a US company (HEWLETT PACKARD): our top positions are primarily filled by women and there are real efforts to do something towards diversity. I feel treated equally, but nevertheless one must often play-act and not show oneself to be emotional. Emotionalism is still a negatively filled term – sadly. If one wants to make career (beyond team leaders), then one must be ready to put one's private life in the background. That applies to men and women (foreign visits, 60 hour weeks.....) which is no problem for men, they have partners and children nevertheless - but as a woman one can normally forget about a relationship, men don't go along with the situation so easily. For women, combining a relationship AND career are anyway hardly possible, not to think of having children. That is a high price, I wouldn't recommend it to anybody and I didn't exactly choose it - it simply just happened. The most important thing that women still have to learn is NETWORKING. That is the magic word!!!! And I could talk about it for hours!"

### **Directed**

In the East professional group over half of the respondents report that they were strongly directed into their initial career choice due to the GDR's structure of workforce allocation linked to the centrally controlled production system. The following is the report of a 34 year old East German woman, married with children, who trained initially as a specialised draftsman with the water industry, the area of her father's occupation. Her mother was employed as a laboratory worker in the chemical industry.

However, her desire was to be an astronomer and her account tells of her struggle against the restrictions imposed by the GDR, the problem of reunification and her eventual (part) success in reaching the career of her choice. As her account shows, she was in many ways directed both by the enforced guidance of the GDR and by her parents.

*Respondent 49*

As my dream occupation was to be an astronomer, I was interested in the observatory that belonged to the Technical University in Dresden, where I went to school. However this was only used by the cartographers to measure the positions of stars - hence my other career wish – cartographer. However, in GDR times, this occupation was severely restricted and because neither of my parents were in the right party, nor my school results brilliant enough to impress, my first application was rejected. This upset me a lot because my prospects to ever work in an observatory were strongly reduced. Therefore in the 10<sup>th</sup> class I worked much harder and I got my best grades ever. My parents, however, advised me as a girl to learn a career before doing the Abitur (which I could do later). Therefore I decided to apply for training as Physicist technician and to get into the observatory this way. However there was only one position in the area at the Technical University of Dresden, and this was already spoken for, so it was useless to apply. Then because I liked painting, although not so much drawing, I decided to become a construction drawer for water engineering - this was influenced by my father who was working in the industry.

After 2 years I finished vocational training as the only apprentice in my year group with 'very good'. This gave me hope to apply to the Volks Hochschule for a place on an Abitur course. Then I worked for about a year at the water department of Dresden as a construction drawer until a friend of my father lured me away into the civil engineering department of Dresden, where I became a scientific collaborator with a more interesting job environment and a bit more



money- parallel to this I took an Abitur course at the Volks Hochschule so that after two years I arrived at a new juncture in my occupational life.

My parents advised me to go for university training in construction sciences or architecture. However I thought I should try to get a step closer to my dream occupation as an astronomer because later I would be too old. In the GDR there was no pure Astronomy as a university course. Therefore I had to be content with studying Physics, although I would never have thought of studying Physics for Physics sake because I thought I was too stupid. As I couldn't avoid it I had to study Physics in Jena. My idea was that when I failed an exam I would know that I was really too stupid and should therefore give up. By chance or luck, however, I passed all exams, although not always brilliantly.

I had heard that only one or two students per study year were trained on a special course for astronomy. Therefore I tried to get paid work experience (Practicum) during term holidays at the university's observatory so that I would be known there. In my 3<sup>rd</sup> study year however they told me in all clarity that I wouldn't be trained as an astronomer if I didn't have a job offer as such. Therefore I asked at all major observatories and other related institutions of the academy of science whether there was a job on offer but without success. After that in my 4<sup>th</sup> year of study, I went for my obligatory Practicum to a special institute for high frequency technology in Jena because they had previously investigated rocks from the moon. Then came reunification and new possibilities for research at the observatory (following formation of a research group financed by the Max Planck Foundation). Students were sought to write diploma dissertations and I was asked whether I wanted to work in there.....

In the East non-professional group, many women also report a strong directing influence on their first career choice by external factors. The following is a 49 year old East German woman, married with children. She worked as specialist sales assistant during

the time of the GDR because she had no other choice although she wanted to be a draftsman. Both parents were employed, and both in gender-typical occupations. Her later career move into business ownership is given as a response to change in domestic circumstances as much as to unemployment following reunification.

### *Respondent 70*

I trained and worked as a specialist sales assistant, basically because I had no other choice. I wanted to be a draftsman, and later would love to have been a singer. After I had completed my training as industrial sales assistant I did further courses and qualified as in economics. I chose this because I wanted to further myself. In 1987, I qualified as a driving instructor. I was interested in this and therefore got the appropriate qualifications in 1987. After the Wende [reunification] I made myself independent and opened my own business on the first March, 1990.

I always wanted to achieve more in my life. Thus I spent a great deal of my time studying. For example, I completed my economic studies as a distant-learning student. At this time I had a husband and two children. During my attempt to better myself I had no support from my family. In particular, my husband made life very difficult for me, particularly because I was independent. In December 1991 he left the family, leaving me with the driving school and the children. In 1993 I opened a taxi-cab operation with 6 taxis - in 1996 I got my own 'Zentrale' (taxi central control office) and in 1999 my own bus operation. In 1998 I completed my driving instructor course to teach motorcyclists and prepare for them for their test. This last initiative I undertook in order to prove that I could still get along and achieve something without a man. Today I sometimes feel everything is a little much, but I wouldn't like to give up anything. My children have also achieved something. My son has completed his training as a skilled worker and my daughter has graduated from university.



## **Extrinsic**

In terms of motives and influences behind the women's first career choices, this is the least attributed classification. The highest percentage of women who can be classed under this heading are found in the West professional group. Given the broader range of options and fewer restrictions that seem to have applied to this group, it is not perhaps surprising that they are more able to consider and discuss what they expected to get from their work in terms of material rewards. As discussed earlier, extrinsic does not apply just to financial rewards but also to other considerations such as work-related benefits, working hours, or proximity to home. The following is the report of a 34 year old West German woman, married, with no children, working as a machine construction engineer.

### **Respondent 40**

I decided on engineering as an alternative to teaching or biology, the first of which didn't interest me and the second had no future. Also I chose it because of good prospects and likelihood of getting a job when studies were finished. Also, why not do something different? Ambition! It wasn't my ideal career when I was young though, I thought I wanted to be a top secretary.

I'm still in the same area of work and I guess I'd say it was ideal for me. However, there are many things about the work that could be better – particularly the working together with male colleagues. On the other hand, I have the security that I seek, and the possibility to change things and influence the future. I find the work fun, although the competition with male colleagues is pretty high (I work in production which is almost exclusively men). On the other hand I have the possibility, along with other women in the same situation, to change the situation. With current lack of engineers, however, I have the feeling that firms are trying to woo women . I can only hope that the future stays that way!

In the East professional group very few women suggest that materialistic concerns influenced their initial career choice, although a higher percentage rated this more highly following reunification. Where materialistic considerations are given as the main motive underlying their career choice it is most often in terms of looking for an occupation that would grant them access to otherwise restricted commodities, such as travel, or that would provide something out-of-the-ordinary. The following is the account of a 36 year old East professional woman working in IT applications development. (Mother works as a legal secretary, father is an electrician.)

*Respondent 56*

I wanted to see the world and in the former GDR this was not possible, except through certain occupations. Therefore I wanted to become radio officer of the merchant fleet. A prerequisite for this was professional training in electronics and the Abitur. Therefore I selected to train as an electronics skilled worker with Abitur. After the birth of my first child, when the child was 5 months old, I began to study economics (that was more a temporary solution, I was never really interested in this field but thought, with a child I needed something solid and reliable. I finished my studies in 1990 (I was allowed then to call myself a certified economist) but my permanent post in a former GDR large-scale enterprise was immediately cancelled. I was always strongly inspired by mathematics and computers so I looked for training possibilities in this direction. Later the labour office offered a place in this field (with job guarantee!) so that I could not say no. The promised job, however, didn't happen but I was very quickly offered employment that for me was ideal: Most importantly it gave me the possibility to also work from home. However the very high demands which my new work (as computer applications developer) in terms of knowledge that is far beyond me at times, means that I am still not sure if I can do it. Thus I use a very large part of my spare time for additional learning, but this is often at the expense of the children. The



financial aspect is meanwhile very important for me, since I alone must be responsible for the living costs of my family, and it was not easy existing on unemployment benefits or ABM pay. Thus I feel really lucky now not to have to examine each [Deutsch] Mark three times before I do something. I'd like to become self employed but I have to think about my financial security and I'm fearful about what would happen if I didn't succeed, especially concerning my children.

In the non-professional groups for both East and West almost none of the women cited materialistic factors as the reason for their career choice. However, the following is the report of a 32 year old West German woman, unmarried with no children, who trained initially for machine construction and later became a machine building technician. Her strongest wish is to find an occupation that is not typically female – something different, but she rates high income as particularly important.

### *Respondent 30*

I wanted to do something unusual (no one else in school chose [machine construction]). I wanted to avoid typical female occupations, I wanted to do something special. I thought it would be fun to do graphical work and fun to do exact work where one had to think and concentrate.

Following this I made two career moves: 1: Further vocational training to become a machine building technician 2: Technical editor in the area of service documentation (optical systems). I chose this because it was a further career development, independent work, to move, change and improve things and to be taken notice of when I express an opinion. It offered acknowledgement of achievement, fun in writing, get to the bottom of things, investigate things, interest in new technologies, high income, and therefore great independence. Also, to see what one has produced.

On the positive side of my work, I found my self-confidence is increased by advancement, long-term successes, meeting/becoming acquainted with interesting people, satisfaction if difficult tasks are accomplished, if acknowledgment is expressed. On the negative side, perseverance, diligence and obstinacy are important. One also has the

feeling that women are still automatically seen as coffee-makers at large meetings when there are primarily men present i.e. the participating woman is expected to make the coffee and clear it away (in enterprises with conventional or old-fashionable staff management).

The theme of a possible pregnancy is often a hindrance, i.e. maternity leave is assumed to be a possibility for almost all women (with lower qualifications). If a project/work is transferred to a woman it is said to be something special in the sense of you're the only woman who is doing something.... In general this is very much dependant on the area - I have fortunately found an enterprise in which gender differences are not so important, in which personal presentation and qualifications count. With this background I could compete even against men with specialist knowledge and with higher qualifications.

### **Circumstantial**

Many of the women refer to incidents of chance or circumstance playing a role in their career choice. Sometimes this is only mentioned in passing as an addendum to their main reasoning or motive. However, for some women, chance happenings or meetings would seem to be the prime reason for their working in their particular field. The following is a 46 year old West German woman, married with children who reports that the direction of both her first and subsequent career choices came about by chance.

### **Respondent 18**

For my dream occupation of Anaesthetist my Abitur grades were not good enough. In the sailing association, of which I was a member, I met someone who was a weather service technician and came to the idea to study meteorology. Interesting work and the possibility of the daily spare-time also appealed to me (time to sail!).

I left this job because there was no chance of a secure, long-term career as a meteorologist in the area of environmental protection such as Medium Range Modelling. My second career was also coincidence: While training for EDV [electronic data processing], which I did at evening school in order not to be unemployed, a person from Xerox asked me whether I'd ever thought of becoming a systems analyst. Given that it



would be much better than my instruction in EDV I took the chance! From this I progressed to become support manager and am now Consultant.

I grew up in an almost pure woman household as an older sister of a brother. My father was still studying at the beginning and then went to work in Hanover so that we only saw him at weekends. He died when I was eleven years old. My mother worked in the wholesale electrical goods business of my grandmother, so that I never thought that things to do with electrical matters could not be anything for girls. In addition, the customers were usually men and one conversed equally over the topics interesting the customers. When I was 15 years, I joined a sailing association, where there were more men than women. Here also the connection to the meteorology developed. Meteorology in Berlin is, in principle, a study of Physics with meteorology as a second subject. In Physics there was a ratio of 3:1 male:female.

Thus I was almost always in predominantly male surroundings where I could see the problems for women quite clearly. However, I could also see that there are areas that are, in general, more effectively completed by women e.g. organization. On the other hand the multiple load of women for me was just as natural. During my activity as scientific collaborator at the university I had never problems of acceptance. I attribute that to the fact that for me 'typical female' behaviours, like pretended helplessness, always were, and still are, an atrocity: I find such behaviour unworthy! However I make very high demands on myself and in smaller measure also on those in my environment, which was and is often set out for me as arrogance.

In real working life I very often experienced that my co-workers had doubts about my competence initially. That is, however, easily dispelled by good work and in the end confidence was higher in my work than in that of my male colleagues. One thing that does annoy me: with men, people ask, what can he do?, with women they ask, what can't she do?

In the East, following reunification, the work found by many of the women in this sample can be said to have been influenced by chance, but in some cases the effect is particularly evident. The following is the account of an East professional woman who

first trained and worked as a skilled worker for automated technology and then, following further training, as an engineer in the same field (i.e. following in the footsteps of her father – her mother was a secretary in the GDR and then unemployed after reunification). Her work as a software developer came about by chance. Her firm was taken over by one that recruited her because she had some previous experience in programming and could retrain.

#### *Respondent 48*

I wanted to take advantage of the combined Abitur/Professional training that was available in the GDR. My original wish was to train as a skilled worker in the building trade and later to specialise as an Architect but in the year when I had to make my choices this wasn't available. So I chose a career that my friend was also going to learn, that my uncle had also learned and which he recommended, and that my step-father had also learned.

After the Wende I was lucky, I went to a large company via transfer, which operated within East Germany (which was important for me - I never wanted to go to the West). As my old firm was taken over by a big company I was able to change direction within the firm and within East Germany. Currently I'm working as a software developer. I was able to change to this because I had learned programming as part of my further studies and I really liked it. I think I can say it's my ideal career. I enjoyed interesting work, a relatively safe job, a good income and approx. 10 minutes to get to work.

To a large extent I have had only good experiences whilst working because, from the outset, (even in the GDR at that time) I did and do work that I find fun. I made one bad experience when, shortly after Wende, while it seemed that my job was not yet safe, I applied for job at another company. Although my husband always looked after the children a lot so that it would have not been a problem for me to spend time away from home and to work long hours in the evenings (the children are real "dad's kids" anyway) as young mother they didn't believe me and said they thought the children would be an obstacle.



## **Summary**

These accounts were selected primarily to serve as examples of the four modes of career choice set out in the typology earlier in this chapter, but they also confirm the hypothesis that women in atypical careers are not an homogenous group, and that context plays the predominant role in where women work. The accounts also stand as illustrations of the complex process of interaction between an individual's internal factors and factors pertaining to the context within which career choices are made, and indicate that no one single internal factor can be said to be driving women's atypical career choice. Rather, they support the suggestion from Chapter 4 that there is a constellation of internal factors which play a role (either directly or mediated by other factors) and that from this constellation, individual factors assume significance at different points in an individual's career/life path, and according to the context within which the individual is effective. Further, as dynamic systems theory suggests, the degree to which an internal factor can be instrumental is highly dependent on factors belonging to the micro- and macro-contexts with which they interact.

## **Discussion and conclusions**

The motivation for this work stemmed from experiences in education in the UK when arranging work-experience placements for 15 year olds as part of the then government's Technical Vocational and Educational Initiative that ran in most secondary schools throughout the 80s and early 90s (Christmas, 1989; Christmas, 1991). The very narrow range of occupations requested by the girls was in stark contrast to those of the boys, and despite the availability locally of a very wide range of work (being an area of redevelopment and expansion to which several new firms had relocated, including light engineering, bio-technology, computer development, printing and design workshops, etc.) that offered pleasant working environments and good pay. The overwhelming requests, however, were for placements in traditional female-typical work areas, such as

hair and beauty, sales, all aspects of medicine, working with children – old people – animals, and administration/office work, where work was also readily available but was generally lower status, and certainly less well paid. This was in spite of a very well developed careers program in the school, including a series of workshops introducing women from the area who worked in wide variety of atypical careers. This lead to the question of why do women primarily work in a narrow range of occupations that are generally disadvantageous in terms of status, pay and conditions? And to the corollary, why do some women choose to work in female-atypical occupations?

From the literature, a variety of theoretical paradigms were found in answer to this question. First, it is suggested that the very nature of being female creates differences which direct women towards certain patterns of behaviour (and precludes them from others) and as an extension of this, imbues them with preferences for certain areas of work. As Rowe (1994) suggests, by this reasoning, women who seek to follow a different pattern are likely to be near the edge of 'masculinity distribution'. Second, nurture theory posits that socialisation by parents/teachers/peers/the media, and society at large, relentlessly transmits accepted gender-role norms so that gendered patterns of behaviour, beliefs, values and expectations are absorbed and taken as 'natural'.

Rejecting both the nature and the nurture theorems, others claim that women's situation in the labour market is due to cultural constructs, such as patriarchy, which has resulted in negative female stereotyping in the context of work, and which underpins labour market structures that are male-oriented, and thus disadvantageous to women. Women's work is seen to be a public extension of what was formerly private i.e., the work women do away from home for pay is strongly linked to the work formerly only done for free in the home – and that men's control over women's production has followed from the private (domestic) sphere into the public (labour market) domain. The traditional responsibility of women for domestic service and child care in the home is



also seen as compounding women's disadvantaged labour market situation. The other side of this argument is that women do not get the best jobs and the same rewards for their work because they lack the same levels of human capital, and the same work commitment as men, preferring to work part-time and seeing their domestic role as superior to that of their work role. In other words, from a rational choice perspective, women choose to work where they do because it offers them the best rewards at the lowest cost for their life situation.

The stance taken for this work has been that, whilst all the above arguments may play a role in directing women's career choices, none can be singled out as being the 'prime suspect'. Instead, it has grounded its approach in the theory of dynamic interactionism, whereby it is the interaction of factors internal to an individual with those relating to the micro-and macro-contexts that forms the structure of opportunity for their actions, in this case, for atypical career choice. The first hypothesis suggested that the degree to which a context is supportive of women's work role i.e., does not expect women to adhere to the stereotypical domestic female role and makes provision in support of this, will be influential as to whether a women's career choice will be oriented towards female-typical or atypical occupations. It also posited that in such contexts more women will enter traditional male-dominated occupations, and that more occupations will be gender-neutral in contexts supportive of women's work role. The second hypothesis suggested that where women make career choices in supportive contexts, fewer internal or micro-contextual factors (such as ambition, life-view or parental SES) will be functional in facilitating entry into atypical work due to the existence of fewer ideological and actual barriers to women engaging in female-atypical work. The final hypothesis, as discussed in this chapter, suggested that women who enter atypical careers will not be an homogeneous group and that contextual factors will be the predominant influence behind their career choices. In sum, the underpinning

hypothesis for this work has been that, whilst a variety of both internal and external factors are involved in women's atypical career choice, it is context that plays the decisive role in determining which internal factors are necessary for the realisation of that choice.

To test these hypotheses, advantage was taken of the natural and unique social experiment that took place following German reunification. In the context of the GDR a very different approach was taken to the role of women: In a secular and socialist state, they were expected to play a full role in all aspects of society – including the world of work. In the West, traditional conservative, Christian-based gender-roles were retained, with women's prime social role being that of wife and mother. The assumption was, therefore, that women in the East before reunification would have encountered fewer barriers to traditional male-dominated occupations, with the result that gender segregation would be lower in the East than in the West. First, as seen in Chapter 3, this assumption was not wholly borne out. In the East, more women were active in traditionally male-dominated occupations, especially as engineers and technicians, than in the West, but even so, 59% of all women workers were working in stereotypical female-dominated occupations with concentrations of 70% women or above.

Following reunification, the East did not (as expected) come to mirror the West, in that, despite the findings in Chapter 3 that fewer women were in traditionally male-dominated occupations (suggesting more barriers than in '81) fewer factors in the East '96 model were significant and the model overall had almost no power to predict typicality of career choice. This finding does, however, strongly support the hypothesis that context determines the functionality of internal factors – something which is also witnessed by the strong similarity between the two West models at both points in time, where less contextual change was seen. The models also indicated that the factors used in the model were not the only factors shaping career typicality i.e. the fit of the model



to the different data was generally good (with the exception, perhaps, of the East '96 model) but their power to predict typicality of career choice was low, suggesting that other factors external to the model were influencing career direction. In order to ascertain what these might be, and to understand more about the processes involved in internal/external factor interaction regarding atypical career choice, the personal accounts of women in atypical careers were collected and analysed.

From the women's accounts, several important points were deduced. First, atypicality, with regard to careers, is shown to be an enigmatic, multi-faceted and highly diverse construct – more so than may be commonly assumed. Second, the context within which the women found themselves was crucial to their entry into atypical careers. Third, there was no predominant means by which women in the sample came to make atypical career choices and the motives they gave for their choices were highly varied. From this latter point, it was possible to distinguish two main locations of influence (themselves and others), and two main areas of focus (occupation-specific and non-specific) that resulted in four principle modes of entry into atypical careers. Most importantly, however, it was seen that the mode of entry changed over time, and as contextual change was encountered. Reporting their initial career choices, many women indicated a strong directing element from others, i.e., the locus of influence was with others, from both the micro (family) and the macro (state) contextual levels. Later, reporting factors influencing their most recent career decisions, far fewer women gave this directed mode as being behind their career choice. Further investigation revealed regional differences in the change of mode of entry over time (again speaking for contextual effect): In the East, reunification had removed state control and enabled several women in the sample to move from female-typical careers into atypical that either better suited their changed circumstances or to realise long-held career preferences (although, as seen in Chapter 3 and discussed in Chapters 4 and 5, it also

raised barriers). In the West, more career changes seem to have been motivated by women's appraisal of developments in the labour market and their requirement for their work to provide them with material benefits, including things such as better financial security (which many of the women, especially those with families, mention as a prime concern).

One important finding from Chapter 5 was the number of women who came to an atypical career by chance. This partly answers the original question of 'are these women different?' Here the answer would have to be no – and as several of the women in the atypical sample explicitly report. For example, as this woman from the East non-professional group writes;

.....despite my decision to follow a rather male occupation, I am a perfectly normal [sic], in physical and mental development, and have lived my life like every other girl. I am neither exaggeratedly emancipated, nor do I feel the need look male or to behave like one. I am simply interested in my work and wanted to try something.

In addition, references to their hopes, fears, wants, and needs concerning their work and everyday lives do not seem unusual, and only a few of the women mention choosing an atypical career because they wanted to be different. One woman who makes a reference to women in atypical careers being different from other women says, "I was never concerned about being different or about belonging to a group. I tried to find a middle way."

Continuing this theme of women who follow atypical careers being perceived as different, or displaying characteristics that are either androgynous (such as high levels of self-efficacy, task motivation, and ambition) or more traditionally associated with males (such as assertiveness, dominance, and competitiveness) the reports of the women (both professional and non-professional) would seem to dismiss this as a general concept.



Some women appear, from their accounts to display some of the more male characteristics outlined above - and certainly, given the means by which some women came to their atypical careers - many women in the sample can be described as highly motivated and efficacious. Certain women demonstrate particular determination and tenacity in following their atypical careers (problems with personal relationships, physical hardship, battling with injustice, and having to make personal adjustments to face work on male terms) so that one can say they are determined and have a positive approach to their work. This was found to be especially true for women in the East who had to circumnavigate the system of the GDR with a great deal of forethought as well as opportunism. Others, however, came to their atypical careers by pure chance, in some cases having previously been in female typical or gender-neutral careers, and rather demonstrate opportunism rather than a strong orientation to careful career planning. Some are obviously assertive and strong-minded but others do not fit the requirement for the non-emotional, extrovert stance, said to be demanded by male-dominated (professional) careers (Vanderwater & Stewart, 1997). These were primarily professional women in the East, who report having particular difficulties with the competitive nature of work in a market economy, where such demands are greater than during the time of the GDR. Ambition was not found to be significant in predicting atypical career choice, although the majority of the group rated themselves high on the scale. This fits with the findings from other research where it was found to be related to career success for women but not to atypical career choice per se (Tomlinson-Kearsey & Gorn, 1997).

Whilst the women in the atypical sample do not see themselves, or want to be seen as different, what is different, of course, is where they work, and the aim of working somewhere different is referenced several times. These women are pilots, train drivers, bus drivers, carpenters, mechanics, painters, engineers, software developers,

mathematicians, and astrophysicists – definitely not occupations usually associated with women – and many of them are pioneers in their fields. In support of this female-typical work is rated as ‘boring’ or ‘like being in hibernation’ by several women.

Overall, findings indicate that women who enter atypical careers are not women who have rejected the traditional female attributes of caring, being person-oriented, or seeking creativity, but women who have seen the possibility to find fulfilment for these attributes within male dominated occupations. Comments suggest that they do not like, and resent many of the attributes of the ‘male world’, especially the need to be competitive, or as one woman describes it, having to “to deal out and deal with the inevitable hard, arrogant, and ‘elbowing’ attitude” (EP). Women in the East comment on this as a particular disadvantage of reunification. In an interview with an East German taxi driver, whilst relating how all occupations related to driving in the GDR were almost exclusively male-dominated, she frequently used the expression ‘powering through’ to explain what women had to do to be successful (both during and after reunification!). Her verbalisation of this concept was always accompanied by a gesture of the arm, fist clenched, pushing forward strongly. Her meaning was that this was something women had to do to exist in a male-dominated work place, and it serves as a good summary of the message behind many of the women’s accounts of their atypical work experiences. In short, what the women in the sample do for employment may be different from that engaged in by the majority of other women, but the women themselves, as their accounts more than adequately display, are not.

Returning to the study as a whole, its main aim was to add to the body of knowledge concerning gender segregation in the labour markets of Europe and to why women persist in concentrating into a narrow range of occupations. The main findings from all three chapters that have analysed the typicality of women’s career choice from three different perspectives, has been that context matters – which, in the area of this



work, means that the prime influences are the labour market and general social attitude. As Reskin and Roos (1990) have pointed out, women's inroads into male-dominated occupations is more through moves by employers than through those of women themselves. But more than that, this work suggests that context can influence even the social effect of biological events, such as pubertal timing, so that cultural and ideological differences at the macro level result not just in differences in structure of opportunity for atypical career choice, but they also resulted in different motives for it at the individual level.

#### Future research and notes for policy making

The broad, holistic approach taken by this work has advantages in that it enables a complex issue to be addressed from different perspectives and thus to provide an insight into how the different parts may interact. However, the breadth of scope is also a disadvantage in that it undoubtedly results in some important contributory factors being omitted, or not dealt with in depth. Whilst every care has been taken for this not to occur, it is acknowledged that this may be the case. For example, the impact of flexible working practices, such as part-time work, on women's career destinations has not been strongly addressed, in part because the debate concerning different modes of work is in itself extremely complex. This was also due to the unsuitability of the data, to differences in the definition of part-time work in the East and West prior to reunification, and to space limitations in the study. Nevertheless, the role of alternative modes of employment, especially part-time work in influencing where women work is acknowledged and is certainly an area that should be addressed more strongly in any future study on atypical career choice.

Further, the analyses (especially in Chapter 4) produced some results that were against expectations and which could not easily be explained, or where the only explanation available was highly speculative. In particular, the findings concerning the

significance of pubertal timing in the East, where the direction of the significance was as predicted on one path and contrary to expectations on the other, which meant that somewhat contradictory results were obtained. This, together with the unexpected persistent relationship (seen in both Chapter 4 and 5) between early pubertal timing and higher levels of education in the East, needs further research to explain what mechanisms may lie behind this significant contextual difference, and to see whether the findings can be replicated with other samples. In a similar vein, results concerning the effect of engagement in routine household tasks on girls career orientation should be studied further to establish whether the routine allocation of stereotypical household tasks influences either typical or atypical career choices.

In terms of the broader implications of the findings of this study, several points stand out. First, the segregation of women in labour markets such as the UK, has been linked to a lower work commitment for women related to the high percentage of women who work part-time. This work, however, suggests that this maybe the case when women have to balance work commitment against family commitment but that when women do not have to carry full responsibility for childcare, this is otherwise. In the reports of the women in the atypical sample, the effect of increased pressure following reunification, when work demands on their time and resources increased but support for childcare has decreased, is seen, whereby several women comment that the pressure was getting too great and they were considering looking for different work, and in one case, for work that required fewer hours during the daytime. Could it be, therefore, that when women are not so constrained by family responsibilities that they commit more to their work role? Again, findings not only from the women's reports but also from survey research like the ALLBUS, suggest that women in the East who had experienced work in a supportive context were more committed to their work role than women in the West, where a greater value for the stereotypical gender-role was seen. Indeed findings



from the Mikrozensus for 1997 (Statistisches Bundesamt, 1998) show that of the 20% women working part-time in 1997, 55% were doing so because they couldn't find full-time work (20% said they worked part-time for family reasons, 3% because of studying, and 3% through ill health).

Second, educational level was found to play a significant role in atypical career choice at each stage of investigation in this study. However, it was not, as supposed, linked directly to the status of the career in question: Women in non-professional careers showed a higher than expected level of education. Linked to this was the relationship seen in some contexts for Maths and Physics, again, also for non-professional careers. Thus, whilst efforts have been made (successfully) to increase the educational level of women in countries such as Britain, it maybe that greater efforts are now needed to emphasise and report the level of attainment for women in traditionally male-dominated subject areas, especially perhaps in information technology.

In terms of personality factors linked by the literature to atypical career choice, findings from this work suggest that, although such characteristics were found to support educational level, they were not found to be predictive of atypical career choice when taken at its broadest meaning (contrary to the suggestions of much of the research in this area). Indeed, no one internal factor was found to be dominant, and as four modes of entry into atypical careers were found, it suggests that an equally broad and varied approach must be taken towards encouraging women to look to broader horizons in their career choices. For example, many women chose atypical careers because they saw a chance for creative, interesting and varied work. Perhaps more girls need to be introduced to atypical spheres of work from this perspective, rather than as something different, which may have negative connotations for teenage girls. Further, many women were opportunistic and can be classed as open to experience. This is often related to self confidence, which again could be the focus of intervention programmes

for young women but with a particular career focus. Linked to this, the role of fathers in their daughter's atypical career choices was very evident from the women's reports in Chapter 5, again concerning both professional and non-professional careers. Here again, perhaps an opportunity is being missed and maybe a role could be found for fathers in the career programmes of schools. But most of all, this work has shown that atypical career choice for women is heavily context dependent, multi-faceted and highly diverse, being as much likely to happen through chance as to be planned, which may explain the lack of predictive power seen in the models in Chapter 4. Perhaps, therefore, policy-making and the design of intervention programmes should address these issues (especially diversity) and target different elements of career choice atypicality rather than treating it as a single entity. Finally, it should be considered as to whether atypicality is a goal for women in itself. The indications from the women's accounts are that their motives are strongly associated with values attached to the work they do (creativity, interesting work, good income) other than seeking work that will help to even gender distribution in the labour market. Perhaps the realisation should be that for many women, gender equality is not necessarily the issue with which to tempt them to look beyond typical careers.

To conclude, it is appropriate that a woman (WNP) working in an atypical career should have the final word in this work. She is also an example of women who have to wait for the chance to attain the career of their choice, and for whom atypical career choice comes later in life, and she illustrates the final point made above. After being directed into work as a secretary by her parents, which she equates to "13 years of hibernation" she was able to retrain and become a painter and varnisher, progressing to attain Meister status. As she says,

I first became a secretary because they were looking for people and I had no free choice of career at home. I would liked to have studied art. I



changed my original job because I had the feeling I was becoming stupid through it! – and because of my longing to be involved with something creative. My experiences: 13 years as a communications secretary equalled 13 years hibernation! The change of occupation into a more creative area meant upwards mobility and thorough personal development. When I was 29 I started my apprenticeship as a painter and I was never so happy as that. The job is hard, and physically demanding. Some colleagues say that women have nothing to do on a building site and some say the contrary – as it is everywhere. I wish everyone who wasn't satisfied could have the courage to change their life. Who was anyway it that made these careers typically male?

## Bibliography

- Abendroth, H. G. (1998) The Mosuo as a living matriarchal society. ReVision, vol. 20, 110-113, <http://promatriarchy.net>
- Abercrombie, N. & Ward, A. (Eds.) (1992) Social change in contemporary Britain. Polity Press.
- Adler, Marina A. (1997) Social change and declines in marriage and fertility in Eastern Germany. Journal of Marriage and the Family, February, 37-49.
- AFL-CIO (1997) Analysis of the current population survey, 1997, February.
- Ahnert, L. & Lamb, M. E. (2001) The East German child care system: Associations with caretaking, caretaking beliefs, and quality of attachment. In R. K. Silbereisen & J. Youniss (Eds.), Families and adolescent development: Germany before and after unification. Special Issue of the American Behavioral Scientist, vol. 44:11, 1843 – 1863.
- Ahnert, L., Lamb, M. E., & Seltenheim, K. (2000). Infant-care provider attachments in contrasting German child care settings: Group-oriented care before German reunification. Infant Behavior and Development, vol. 23:2, 197-209.
- Ai, X. (1992) Gender differences in growth in mathematics achievement: Three-level longitudinal and multilevel analyses of individual, home, and school influences. University of California, Los Angeles.
- Alfermann, D. & Reigber, D. (1996) Women from two cultures: Social attitudes of East and West German women after reunification. Paper presented at the Biennial Meeting of the International Society for the Study of Behavioural Development, Quebec City, Quebec, Canada, August 12-16, 1996.
- ALLBUS Baseline-Study (1991), and ALLBUS (1996) Allgemeine Bevölkerungsumfrage der Sozialwissenschaften (General population survey from the social sciences). Central Archive for Empirical Research, University of Köln.
- Anker, R. (1997) Theories of occupational segregation by sex: An overview. ILO, Geneva.
- Anker, R. (1998) Gender and jobs: Sex segregation of occupations in the world. ILO, Geneva.
- Anker, R. & Hein, C. (1985) Why Third World urban employers usually prefer men. International Labour Review (Geneva) Vol. 124, No. 1, pp. 73-90.



- Anker, R. & Hein, C. (Eds.) (1986) Sex inequalities in urban employment in the Third World. London, Macmillan.
- Arbuckle, J. L. & Wothke, W. (1999) Amos 4.0 User's Guide. Small Waters Corp.
- Arnot, M., Gray, J., James, M., Rudduck, J., & Duveenm G. (1998) Recent research on gender and educational performance. OFSTED Reviews of Research: Office for Standards in Education, HMSO.
- Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999) Adolescent problem behavior: The influence of parents and peers. Behaviour Research and Therapy, Mar; vol. 37:3, 217-230.
- Astin, H. S. (1984) The meaning of work in women's lives: A sociopsychological model of career choice and work behavior. The Counselling Psychologist vol. 12: 4, 117-126.
- Bandura, A. (Ed) (1995) Self-efficacy in changing societies. New York, NY, USA: Cambridge University Press.
- Barrett, M. (1987 second edition) Women's Oppression Today. London, Verso.
- Baruch, G. & Barnett, R. (1979) Involvement in multiple roles and the well-being of adult women. Paper presented at Annual Meeting of the American Sociological Association, Boston, MA, August 1979.
- Bebel, A. (1988) Women in the past, present, and future. New York: AMS.
- Beckmann, P. (Ed) (1996) Gender specific occupational segregation. Institut für Arbeitsmarkt- und Berufsforschung, IAB [Institute for Labour Market and Occupational Research of the Federal Office of Labour], Nürnberg, Germany.
- Bell, I. A. (1989) Something's gone wrong here and it's not me: Challenging the dilemmas that block girl's success. Journal for the Education of the Gifted, 12, 118-130.
- Bem, S. L. (1974) The measure of psychological androgyny. Journal of Consulting and Clinical Psychology, vol. 42:2, 155-162.
- Benbow, C. P (1988) Sex differences in mathematical reasoning ability in intellectually talented preadolescents: Their nature, effects, and possible causes. Behavioral and Brain Sciences, 11, 169 - 232.
- Benbow, C. P., & Minor, L. L. (1986) Mathematically talented males and females and achievement in the high school sciences. American Educational Research Journal, 23, 425-436.

- Benbow, C. P. & Stanley, J. C. (1984) Gender and the science major: A study of mathematically precocious youth. In M. W. Steinkamp & M. L. Maehr (Eds.) Women in science: Advances in motivation and achievement, vol.2, 165-195. Greenwich, CT: JAI Press.
- Bentler, P. M. (1988) Causal modeling via structural equation systems. In Nesselroade, J. R. & Cattell, R. B. (Eds.) Handbook of multivariate experimental psychology (2nd ed.). Perspectives on individual differences, 317-335, Plenum Press.
- Beruf Aktuell, 1992 (1992/3 English edition) Stothfang, E., et al (Eds.) Bundesanstalt für Arbeit, Nürnberg.
- Best, H. & Hornbostel, S. (1998) Prozeß-produzierte Daten als empirisches Material für eine Soziologie des realen Sozialismus [Process produced data as empirical material for a sociology of real socialism] in Materialien zu Erforschung der DDR-Gesellschaft [Materials for research into East German society] Leske & Budrich, Opladen, 210-221.
- Betz, N. E. & Fitzgerald, I. F. (1987) The career psychology of women. Orlando, FL, Academic Press.
- Betz, N.E. & Hackett, G. (1981) A self-efficacy approach to the career development of women. Journal of Vocational Behavior, vol.18:3, 326-339.
- Betz, N. E. & Hackett, G. (1986) Applications of self-efficacy theory to understanding career choice behavior. Journal of Social and Clinical Psychology, 4:3, 279-289.
- Beyer, M. (1992) The situation of East German women in post-unification Germany. Women's Studies Int. Forum, vol. 15:1, 111-114.
- Bjorklund, D. F, & Kipp, K. (1996) Parental Investment Theory and Gender Differences in the Evolution of Inhibition Mechanisms. Psychological Bulletin, vol.120:2, 163-188.
- Blackburn, R. M. & Jarman, J. (1997) Occupational Gender Segregation. Social Research Update, University of Surrey,  
<http://www.soc.surrey.ac.uk/sru/SRU16/SRU16.html>
- Blackburn, R.M., Siltanen, J. & Jarman, J. (1995) Measuring occupational gender segregation: Current problems and a new approach. Journal of the Royal Statistical Society, Series A, 158: 319-331.
- BLR – Bundesforschungsanstalt für Landeskunde und Raumordnung (1994). Raumordnungsprognose 2010; [Environmental Planning Forecast (for the year) 2010: 1st Volume: Population, Household and Employment] Selbstverlag, Bonn.



- Blustein, D. L., Pauling, M. L., DeMania, M. E. & Faye, M. (1994) Relation between exploratory and choice factors and decisional process. Journal of Vocational Behavior, 44, 75-90.
- Blustein, D.L. (1997) The Role of Work in Adolescent Development. The Career Development Quarterly, 45, 38-389.
- Boehnke, K., Dettenborn, H. Horstmann, K. & Schwartz, S. H. (1994) Value priorities in the united Germany and students from East and West compared. European Journal of Psychology of Education, vIX:3, 191-202.
- Bouchard, T.L., Jr., Lykken, D.T., McGue, M., Segal, N.L., & Tellegen, A. (1990) Sources of human psychological differences: The Minnesota study of twins reared apart. Science, 250, 223-228.
- Bouchard, T.J Jnr. (1999) Genes, environment and personality. In Ceci, S.J. & Williams, W.M. (Eds.) The nature-nurture debate, Blackwell Publishers Ltd., Oxford, 98-103.
- Bourdieu, P. & Passeron, J-C. (Nice, R. Trans.) (1990) Reproduction in education, society, and culture (2nd ed.) Thousand Oaks, CA. US.
- Bourdieu, P. (1997) Forms of capital. In Halsey, A. H. et al (Eds.) Culture, Economy and Society, Oxford University Press.
- Bronfenbrenner, U. (1989) Ecological Systems Theory. In R. Vasta (Ed.) Six theories of child development: Revised formulations and current issues (pp185-246) Greenwich.
- Brown, M. W. & Cudeck, R (1993) Alternative ways of assessing model fit. In Bollen, K.A. and Long, J.S. (Eds.) Testing structural equation models. Newbury Park, California: Sage, 136-162.
- Brown, N. & Evany, R. (1998) Socioeconomic Status and Education: Living in a Social World. Psy 324: Advanced Social Psychology, Spring 1998  
<http://miavx1.muohio.edu>
- Burns, R. B. (1982) Self-concept development and education. Holt, Rinehart & Winston Ltd: Eastbourne.
- Bynner, J. (1998) Education and family components of identity in the transition from school to work. International Journal of Behavioral Development, 22/1, 29-50.
- Cavalli, A. (1988) Zeiterfahrungen von Jugendlichen: Versuch einer Typologie [Adolescent experiences of time: Attempt at a typology]. In Rainer Zoll (Ed.) Zerstörung und Wiederaneignung von Zeit [Time lost and regained] Frankfurt.

- Cheng, Y., Payne, J., & Witherspoon, S. (1995) Science and Mathematics in full-time education after 16. Youth Cohort Report No. 36, London. Department of Education and Employment.
- Christmas, V. E. (1989) Equal opportunities in practice: TVEI evaluation report for Brays Grove Comprehensive School, Harlow, Essex. (Unpublished).
- Christmas, V. E. (1991) Gendered values: An appraisal of the new BIS course. TVEI evaluation report for Barking Abbey School, Barking, Essex. (Unpublished).
- Christmas, V. E. (1995) Reunification and the German Education System. Unpublished M.A. Dissertation, University of London, Institute of Education.
- Clifford, G. (1982) Marry, stitch, die, or do worse: Educating women for work. In H. Kantor & D. Tyack (Eds.) Work, youth and schooling: Historical perspectives on vocationalism in American education, Stanford University Press, Stanford.
- Church, J.(Ed.) (1995) Social trends 25: 1995 Edition. Central Statistical Office, HMSO.
- Churchman, D. (1984) Mother's attempts come to naught in the end. Norman (Oklahoma) Transcript, p. 9A.
- Cockburn, C. (1988) Two-track training: sex inequalities and the YTS. London: Macmillan.
- Cohn, L. D. (1991) Sex differences in the course of personality development: A meta analysis. Psychological Bulletin, vol. 109:2, 252-266.
- Coleman, J. S. (1966) Equality of educational opportunity. Washington, DC. US Dept of Health, Education and Welfare.
- Collins, R. (1979) Social capital in the creation of human capital. American Journal of Sociology, (suppl.) S95-S120.
- Collinson, D. L., Knights, D. & Collinson, M. (1990) Managing to Discriminate, Routledge, London and New York.
- Condry, J. & Condry, S. (1976) Sex differences: A study of the eye of the beholder. Child Development, 47, 812-819.
- Connor, S (1997) Scientists find gene for intelligence. London Sunday Times, Oct. 19.
- Connor, S. (1997) Men and women: minds apart. The Sunday Times, News Review, Mar. 2.
- Coté, J. E. (1996) Sociological perspectives on identity formation: The culture-identity link and identity capital. Journal of Adolescence. 19, 491-496.



- Crocket, L. J. & Bingham, C. R. (2000) Anticipating adulthood: Expected timing of work and family transitions among rural youth. Journal of Research on Adolescence, vol. 10:2, 151-172.
- Crompton, R. (1992) Where did all the bright girls go? Women's higher education and employment since 1964, in, Abercrombie, N. & Ward, A. (Eds.) Social change in contemporary Britain, Cambridge, Polity, 54-69.
- Crompton, R., Gallie D. & Purcell K (1996) Changing forms of employment: Organisations, Skills and Gender, Routledge.
- Crouter A. C., Monke, B. A., & McHale, S. M. (1995) The family context of gender intensification in early adolescence. Child Development Vol. 66, 2, 317-329.
- Cullingford, C. (1993) Children's Views on Gender Issues in School. British Educational Research Journal, vol.19:5, 555-63.
- Datenreport 1992 Zahlen und Fakten über die Bundesrepublik Deutschland. Band 309. [Facts and figures about the Federal republic of Germany] Bundeszentrale für politisch Bildung.
- Datenreport 1997 Zahlen und Fakten über die Bundesrepublik Deutschland. Band 340. [Facts and figures about the Federal republic of Germany] Bundeszentrale für politisch Bildung.
- Dauber, S. L. & Benbow, C. P. (1990) Aspects of personality and peer relations of extremely talented adolescents. Gifted Child Quarterly, Vol. 34 (1) p10-15.
- De Paul U, (1998) Dept of Psychology, Chicago, IL, USA, Organizational Behavior and Human Decision Processes, Vol. 76:1, 1-29.
- Delamont, S. (1983) The conservative school? Sex roles at home, at work, and at school. In Walker, S. & Barton, L., Gender, Class and Education. Falmer.
- Delphy, C. & Leonard, D. (1992) Familiar exploitation: A new analysis of marriage in contemporary western societies. Polity Press.
- Devine, F. (1993) Gender segregation and labour supply: on 'choosing' gender-atypical jobs. British Journal of Education and Work, 6:3, 61-73.
- Diczuneit, V. (1997) Für den Sieg des Sozialismus – Ran an die Arbeit! [For the success of Socialism – Off to work!] in Schäfer, H. (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland. [Unequal Sisters? Women in East and West Germany], Haus der Geschichte der Bundesrepublik Deutschland. [History of Germany Building] Bonn.

- Doeringer, P and Piore, M (1971), Internal labor markets and manpower analysis.  
Lexington, MA, D.C. Heath and Co.
- Douvan, E., & Adelson, J. (1966). The adolescent experience. New York: Wiley.
- Dunteman, G. H., Wisenbaker, J., & Taylor, M. E. (1978) Race and sex differences in college science program participation. Report to the National Science Foundation.  
North Carolina: Research Triangle Park.
- Eberstadt, N. (1994) Demographic shocks after communism: Eastern Germany 1989-93. Population and Development Review, vol. 20:1, 137-151.
- Eccles (Parsons), J., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L. & Midgley, C. (1983) Expectations, values and academic behaviors. In J. T. Spence (Ed.) Perspective on achievement and achievement motivation, San Francisco, W. H. Freeman, 75-146.
- Eccles, J. (1985) Why doesn't Jane run? Sex differences in educational and occupational patterns. In Horowitz, F. D. & O'Brien, M. (Eds.) The gifted and talented: Developmental perspectives, Washington, DC: APA, 251-295.
- Eccles, J. (1987) Gender roles and women's achievement-related decisions. Psychology of Women Quarterly, 11, 135-172.
- Eccles, J. S., Jacobs, J. E. & Harold, R. D. (1990) Gender role stereotypes, expectancy effects, and parents' socialization of gender differences. Journal of Social Issues, vol. 46:2, 183-201.
- Eccles, J. (1993) School and family effects on the ontogony of children's interests, self-perceptions, and activity choice, in, Jacobs, J. (Ed.) Nebraska symposium on motivation, 1992: Developmental perspectives on motivation. Lincoln, NB: University of Nebraska Press, 145-208.
- Eccles, J. S. (1994) Understanding women's educational and occupational choices, Psychology of Women Quarterly, 18, 585-609.
- Eccles, J., Barber, B. & Jozefowicz, D. (1999) Self-evaluations of competence, task values, and self-esteem. In: N. G. Johnson & M. C. Roberts (Eds.) Beyond appearance: A new look at adolescent girls. Washington, DC, US: American Psychological Association, 53-83.
- Eisenstein, Z. R. (Ed.) (1979) Capitalist patriarchy and the case for socialist feminism, New York: Monthly Review Press.



- Elder, G. H. and Caspi, A. (1990) Studying lives in a changing society: Sociological and personological explorations. In A. Rabin, R. A. Zucker, R. A. Emmons and S. Frank (Eds.) Studying Persons and Lives, 201-247). New York: Springer.
- Engels, F. ([1884] 1972) Origins of the family, private property, and the state. Reprinted, edited and with introduction by E. B. Leacock, Lawrence & Wishart, New York International Publishing.
- Equal Opportunities Commission (2002) Facts about women and men in Great Britain. [www.eoc.org.uk](http://www.eoc.org.uk)
- Erikson, E.H. (1968) Identity: Youth and Crisis. New York, Norton.
- Evans, K. & Heinz, W. R. (1994) Becoming Adults in England and Germany. Anglo-German Foundation for the Study of Industrial Society, London (England).
- Eysenck, H. J. (1967) The biological basis of personality. Springfield, IL, Charles C. Thomas.
- Fagot, B. I. (1998) Social problem solving; Effect of context and parent sex. International Journal of Behavioral Development, 22:2, 389-401.
- Farenga, S. J. & Joyce, B. A., (1999) Intentions of young students to enrol in science courses in the future: An examination of gender differences. Science-Education. Jan; vol. 83:1, 55-75.
- Farmer, H. S., (1985) Model of career achievement motivation for women and men. Journal of Counseling Psychology, 32, 363-390.
- Fassinger, R. E. (1985) A causal model of college women's career choice. Journal of Vocational Behavior, 27, 123-153.
- Fassinger, R. (1990) Causal model of career choice in two samples of college women. Journal of Vocational Behavior, 36, 223-248.
- Fear-Fenn, M. B., & Kapostasy, K. K. (1992) Math + Science + Girls = Vocational preparation for girls: A difficult equation to balance. Columbus, OH: The Ohio State University: ERIC Document Reproduction Service No. ED 341 863.
- Feingold, A. (1994) Gender differences in personality. Psychological Bulletin, vol. 116:3, 429-456.
- Fend, H. (1991) Identitätsentwicklung in der Adoleszenz [Identity Development in Adolescence] Band 2. Bern: Hans Huber.
- Ferry, T. R. (1999) Career development: A math and science social cognitive model. US Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol.59:9-A, 3347.

- Ferry, T. R., Fouad, A. N. & Smith, P. L. (2000) The role of family context in a social cognitive model for career-related choice behavior: A math and science perspective. Journal of Vocational Behavior, vol.57:3, 348-364.
- Festinger, L. (1957) A theory of cognitive dissonance. Stanford, CA: Stanford University Press.
- Flannery, D. J., Williams, L. L., & Vazsonyi, A. T. (1999) Who are they with and what are they doing? Delinquent behavior, substance use, and early adolescents' after-school time. American Journal of Orthopsychiatry, v69(2): 247-253.
- Fobe, K. (1997) Risiken, Optionen und Entscheidungen von ostdeutschen Schulabsolventinnen auf dem Ausbildungs- und Arbeitsmarkt (Training and Labor Market Risks, Options and Choices of East German School-leavers) in W. R. Heinz & S. E. Hormuth (Eds.) Arbeit und Gerechtigkeit im ostdeutschen Transformationsprozeß (Work and justice in the transformation process in East Germany) Opladen: Leske & Budrich.
- Förderung der Frau (1973) Staatliche Dokumente zur Förderung der Frau in der Deutschen Demokratischen Republik. (State document on the furtherance of women in the GDR) Gesetzdokumentation Staatsverlag der DDR, Berlin, 1973.
- Fourastié, J. (1949) Le grand espoir du XXe siècle. Progrès technique - progrès économique - progrès social. PUF, Paris.
- Fox, L. H. (1982) The study of social processes that inhibit or enhance the development of competence and interest in mathematics among highly able young women. Final report to the National Institute of Education: Washington, DC.
- Freiberg, P (1991) Self-esteem gender gap widens in adolescence. APA Monitor, 22:4. 29.
- Frisch, H. L. (1977) Sex Stereotypes in Adult-Infant Play. Child Development 48:4, 1671-5.
- Fulkerson, K., Furr, S. & Brown, D. (1983) Expectations and achievement among third-, sixth-, and ninth-grade black and white males and females. Developmental Psychology, 19:2, 231-236.
- GDR Today (1981) Staatsverlag der Deutschen Demokratischen Republik [Official Publication from the German Democratic Republic], Berlin.
- Geißler, R. (1992) Die Sozialstruktur Deutschlands [The social structure of Germany] Westdeutscher Verlag.



- Gerhard, U. (1994) Die staatlich institutionalisierte ‚Lösung‘ der Frauenfrage. Zur Geschichte der Geschlechterverhältnisse in der DDR. In, H. Kaeble & J. Kocka (Eds.) Sozialgeschichte der DDR, Stuttgart, Klett-Cotta, 383-403.
- Gesetzbuch der Arbeit [Labour Laws] (1961) Staatsverlag der Deutschen Demokratischen Republik [Official Publication from the German Democratic Republic], Berlin.
- Gesetzesdokumentation (1973) Staatliche Dokumente zur Förderung der Frau in der Deutschen Demokratischen Republik. [State documentation on the promotion of women in the GDR] Staatsverlag der Deutschen Demokratischen Republik.
- Glouchevitch, P. (1992) Juggernaut: The German Way of Business. New York: Simon.
- Goldberg, G. S. (1991) Women on the Verge: Winners and Losers in German Unification. Social Policy: Fall 1991: 34-44.
- Goldin, C. & Rouse, C. (1997) Orchestrating impartiality: The impact of 'blind' auditions on female musicians. National Bureau of Economic Research. Working Paper No. W5903. <http://papers.nber.org>.
- Goldthorpe, J. H., Lockwood, D., Bechhofer, F. & Platt, J (1968) The affluent worker: Industrial attitudes and behaviour. Cambridge University Press.
- Golub, S. & Catalano, J (1983) Recollections of menarche and women's subsequent experience with menstruation. Women and Health, 8, 49-61.
- Gonzalez, A. & Zimbardo, P. (1985) Time in perspective. Psychology Today, 19:3, 21-26.
- Gottfried, A.W., Gottfried, A. E., Bathurst, K. & Guerin, D. W. (1994) Gifted IQ: Early developmental aspects. Plenum, New York & London.
- Goudge, B. S. & Littrell, M. A. (1989) Attributions for job acquisition: Job skills, dress, and luck of female job applicants. Clothing and Textiles Research Journal, vol.7:4, 19-26.
- Gray-Little & Carels (1997) The effect of racial dissonance on academic self-esteem and achievement in elementary, junior high and high school students. Journal of Research on Adolescence, 7:2, 109-131.
- Grimm, J. (1978) Women in female dominated professions. In A. H. Stromberg & S. Harkess (Eds.) Women working: Theories and facts in perspective .293-315 Palo Alto, CA: Mayfield.
- Grootings, P. (1993) VET in transition: An overview of change in three East European countries. European Journal of Education, vol.19:2, 229-240.

- Grusec J. E, Goodnow J. J. & Cohen L. (1996) Household work and the development of concern for others. Developmental Psychology, vol.32, 6, 999-1007.
- Gustafson, S. B., Stattin, H., & Magnusson, D. (1992) Aspects of the development of a career versus homemaking orientation among females: The longitudinal influence of educational motivation and peers, Journal of Research on Adolescence, vol. 2:3, 241-259.
- Hackett, G. (1995) Self-efficacy in career choice and development. In Bandura, A. (Ed.) Self-efficacy in changing societies, New York, Cambridge University Press, 232-258.
- Hakim, C. (1978) Sexual divisions within the labour force: occupational segregation. Department of Employment Gazette, November, p1364ff.
- Hakim, C. (1985) Social monitors: population censuses as social surveys. In M. Bulmer (Ed.) Essays on the History of British Sociological Research, Cambridge: Cambridge University Press.
- Hakim, C. (1989/90) Workforce re-structuring in Europe in the 1980s. The International Journal of Comparative Labour Law and Industrial Relations, vol. 5:4, 167-203.
- Hakim, C. (1991) Grateful slaves and self-made women: fact and fantasy in women's work orientations. European Sociological Review, vol. 7:2, 101-121.
- Hakim, C. (1992) Explaining trends in occupational segregation: The measurement, causes, and consequences of the sexual division of labour. European Sociological Review, vol. 8:2, 127-152.
- Hakim, C. (1993a) Notes and issues: The myth of rising female employment. Work, Employment and Society, vol. 7:1, 97-120.
- Hakim, C. (1993b) Segregated and integrated occupations: A new approach to analysing social change. European Sociological Review, vol. 9:3, 289-314.
- Hakim, C. (1994) A century of change in occupational segregation: 1891-1991. Journal of Historical Sociology, vol. 7:4, 435-456.
- Haller, M. & Hoellinger, F. (1994), Female employment and the change of gender roles: The conflictual relationship between participation and attitudes in international comparison. International Sociology, vol. 9:1, 87-112.
- Hannah, J. A-S. & Kahn, S. E. (1989) The Relationship of Socioeconomic Status and Gender to the Occupational Choices of Grade 12 Students. Journal of Vocational Behavior, vol.34:2, 161-178.



- Hannover, B., Scholz, P. & Laabs, H.-J. (1992) Technikerfahrung und mathematisch-naturwissenschaftliche Interessen bei Mädchen und Jungen: Ein Vergleich zwischen Jugendlichen aus den alten und den neuen Bundesländern. [Technical experience and mathematic and scientific interests in girls and boys: A comparison of adolescents from the old and new states of the Federal Republic of Germany.] Zeitschrift fuer Entwicklungspsychologie und Paedagogische Psychologie, vol. 24:2, 115-128.
- Hanson, S. & Pratt, G. J. (1995) Gender, work and space. Routledge.
- Hargreaves, D. H. (1977) The process of typification in classroom interaction: models and methods. British Journal of Educational Psychology, 47, 274-284.
- Harris, I. M. (1995) Messages Men Hear: Constructing Masculinities. London: Taylor & Francis.
- Harris, J.R. (1999) How to succeed in childhood. In Ceci, S.J. & Williams, W.M. (Eds.) The nature-nurture debate, Blackwell Publishers Ltd., Oxford.
- Hartmann, H. (1981) The family as the locus of gender, class and political struggle: the example of housework. Signs, 6, 366-94.
- Hartup, W. W. (1983) The peer system. In P. Mussen & E. Heatherington (Eds.) Handbook of child psychology (4th edition) vol. 4, 103-196, New York: Wiley.
- Hayghe, H. (1986) Rise in mothers' labor force activity includes those with infants. Monthly Labor Review, 109, 43-45.
- Heinz, W. R. (1996) Berufsverläufe im Transformationsprozeß [Career path development in the transformation process] in S. E. Hormuth, W. R. Heinz, H.-J. Kornadt, H. Sydow, & G. Trommsdorff (Eds.) Individuelle Entwicklung, Bildung und Berufsverläufe [Individual Development, Education and Career Paths] Opladen: Leske & Budrich, 273-329.
- Helwig, G. (1997) Leitbilder und Alltagsrealität, in H. Schäfer (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland. [Unequal Sisters? Women in East and West Germany], Haus der Geschichte der Bundesrepublik Deutschland. [History of Germany Building] Bonn.
- Hickman, C. W. (1995) High School Parent Involvement: Relationships with Achievement, Grade Level, SES, and Gender. Journal of Research and Development in Education; vol. 28:3, 125-34, Spring.
- Hill, J. P. & Lynch, M. E., (1983) The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn & A. C. Petersen (Eds.)

- Girls at Puberty: Biological and psychosocial perspectives, 201-228, New York, Plenum.
- Hill, P.W., Holmes-Smith, P., & Rowe, K.J. (1993) School and teacher effectiveness in Victoria: Key findings from Phase 1 of the Victoria quality schools project. Melbourne Centre for Applied Educational Research, University of Melbourne.
- Hilton, J. L. & von Hippel, W. (1996) Stereotypes. Annual Review of Psychology, 47, 237-71.
- Hinde, R. A. & Stevenson-Hinde, A. (1987) Implications of a relationship approach for the study of gender differences. Infant Mental Health Journal, 8, 221-235. Cited by Rutter, M., Quinton, D, & Hill, J. (1990) Adult outcome of institution-reared children. In Robins L.N. and Rutter, M.E. (Eds.) Straight and devious pathways from childhood to adulthood Cambridge University Press, 135-157.
- Holland, J. L. (1973) Making vocational choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall.
- Holland, J. L. (1985) Making vocational choices: A theory of personalities and work environments. Englewood Cliffs, NJ: Prentice-Hall.
- Hong, E., Milgram, R. M., & Whiston, S. C. (1993). Leisure activities in adolescents as a predictor of occupational choice in young adults: A longitudinal study. Journal of Career Development, 19, 221-229.
- Hoose, D. & Vorholt D. (1997) Der Einfluß von Eltern auf das Berufswahlverhalten von Mädchen [The influence of parents on girls' career choices] Aus Politik und Zeitgeschichte, B 25/97.
- Huston, A. C. (1983) Sex-typing. Handbook of child psychology. P. H. Mussen (Ed.) 4th Edition, vol. 4: 387-467.
- Inglehart, R. F. & Norris, P. (2000) Gender and party choice: New cleavages, new politics, in 70 post-industrial, post-communist and developing societies. Paper presented at the 18th world congress of the International Political Science Association, August 1-5 , 2000, Quebec City, Canada.
- Inoue, Y. (1997) The educational and occupational attainment process for american women. ASHE Annual Meeting Paper. Paper presented at the Annual Meeting of the Association for the Study of Higher Education (Albuquerque, NM, November 6-9, 1997).



- Institute der Deutschen Wirtschaft Köln (1997) Zahlen zur wirtschaftlichen Entwicklung der Bundesrepublik Deutschland [Statistics on economic developments in Germany] Deutsches Institutes Verlag GmbH, Köln.
- Jacobs, J. (1991) Influence of gender stereotypes on parent and child mathematics attitudes. Journal of Educational Psychology, 83, 518-527.
- Jacobs, J. (1996) Gender inequality and higher education. Annual review of sociology, Annual Reviews Inc., vol. 22, 153-185.
- Jenson, J. (1989) The talents of women, the skills of men: flexible specialization and women. In S. Wood (Ed.) The transformation of work? Skill, Flexibility, and the Labor Process. Unwin Hyman, London.
- Jewett, T. O. (1996) And they is us: Gender issues in the instruction of science. Eric document: ED402202.
- Jimerson, S., Egeland, B. & Teo, A. (1999) A longitudinal study of achievement trajectories: Factors associated with change. Journal of Educational Psychology, vol 91:1, 116-126.
- Joffe, L. & Foxman, D. (1988) Attitudes and gender differences. Slough, NFER-Nelson.
- Johnson, N. G. & Roberts, M. C. (Eds.) (1999) Beyond appearance: A new look at adolescent girls, Washington, DC, US: American Psychological Association.
- Jones, M. G, Howe, A, & Rua, M. J. (2000) Gender differences in students' experiences, interests, and attitudes toward science and scientists. Science Education, vol. 84:2 180-192.
- Jonung, C. (1996) Economic Theories of Occupational Segregation by Sex – Implications for Change over Time. In P. Beckman (Ed) Gender Specific Occupational Segregation. Institute for Labour Market and Occupational Research of the Federal Office of Labour, Germany.
- Kaplan, G. (1992) Contemporary western feminism. UCL Press, London: Allen & Unwin.
- Katz, P. A. (1986) Gender identity: Development and consequences. in Ashmore & Del Boca (Eds.) The psychology of male-female relations 21-67 Academic Press.
- Kelly, K. R. (1993) The relation of gender and academic achievement to career self-efficacy and interests. Gifted-child Quarterly, 37, 2, 59-64.
- Kessler, S., Ashenden, D., Connell, B., & Dowsett, G. (1987) Gender Relations in Secondary Schooling. In M. Arnot, & G. Weiner (Eds) Gender and the Politics of Schooling. Hutchinson.

- Kestenberg, J. S. (1961) Menarche. In S. Lorand & H. Sehneer. (Eds.) Adolescents, New York: Hoeber Press.
- King, M. I. & Rabil Jr., A. (Eds.) (1999) Introduction to the series. In L. Marinella, The Nobility and Excellence of Women and the Defects and Vices of Men. The other voice in early modern Europe series. University of Chicago Press, Chicago and London.
- Klages, M. (1997) Modern critical thought: Notes on Freud (Online)  
<http://www.colorado.edu/English/ENGL2012Klages/freud.html>
- Koeller, O., Daniels, Z., Schnabel, K.U. & Baumert, J. (2000) Kurswahlen von Mädchen und Jungen im Fach Mathematik: Zur Rolle von fachspezifischem Selbstkonzept und Interesse. [Course selections of girls and boys in mathematics: The role of academic self-concept and interest.] Zeitschrift für Pädagogische Psychologie, vol.14:1, 26-37.
- Kohn, M. L. (1984) The effects of social class on parental values. In Voydanoff, P. (Ed.) Work and family: Changing roles of men and women, Paolo Alto, CA: Mayfield, 119-132.
- Kolinsky, E. (1989) Women in Contemporary Germany: Life, Work and Politics. Berg Publishers Ltd.
- Krahn, H. (1991) The school to work transition in Canada: New risks and uncertainties. In Status passages and the life course Vol. II, Heinz, W. R. (Ed.) The life course and social change: Comparative perspectives, Deutscher Studien Verlag, Weinheim, 43-70.
- Kuebli, J. (1994) Young children's understanding of everyday emotions. Young Children, vol. 49:3, 36-47.
- Lane, C. (1983) Women in socialist society with special reference to the German Democratic Republic. Sociology, vol. 17:4, 489-505.
- Langlois, J. H. & Downs, A. C. (1980) Mothers, fathers, and peers as socialization agents of sex-typed play behaviors in young children. Child Development, vol. 51:4, 1237-1247.
- Laqueur, T. (1990) Making sex: Body and gender from the Greeks to Freud. Cambridge, MA: Harvard University Press.
- Lemkau, J.P. (1983) Women in male-dominated professions: Distinguishing personality and background characteristics. Psychology of Women Quarterly, 8, 144-165.



- Lerner, R. M. (1978) Nature, nurture, and dynamic interactionism. Human Development, 21, 1-20.
- Lerner, R. M. (1995) The limits of Biological Influence: Behavioral Genetics as the Emperor's New Clothes. Psychological Inquiry, vol. 6: 2, 145-156.
- Lerner, R. M. (vol. Ed.)(1998) Theoretical Models of Human Development, vol.1 Handbook of Child Psychology (5th Ed.) Editor-in-Chief, William Damon. New York: Wiley.
- Levine, A. & Nidiffer, J. (1996) Beating the odds: How the poor get to college. The Josey Bass Higher and Adult Education Series. First Edition.
- Lindenberg, S. M. (1991) Social approval, fertility and female labor market behavior. In Siegers, J. J., de Jong-Gierveld & van Imhoff, J. (Eds.) Female labor market behavior and fertility: A rational choice approach, Berlin/New York: Springer Verlag, p32-58.
- Lips, H, M, Sex and Gender (1993). Mayfield Publishing Co.
- Low Pay Unit (2001) Women, work and pay. On-line report.  
[www.lowpayunit.org.uk/research/factswomenpay.shtml](http://www.lowpayunit.org.uk/research/factswomenpay.shtml)
- Lytton, H. & Romney, D. M. (1991) Parent's differential socialization of boys and girls: A meta analysis. Psychological Bulletin vol.109:2, 267-296.
- Maccoby, E. E. (2000) Perspectives on gender development. International Journal of Behavioral Development, 42:4, 398-406.
- Macek, P., Flanagan, C. A., Gallay, L., Kostron, L., Botcheva, L. & Csapo, B. (1998) Postcommunist societies in times of transition: Perceptions of change among adolescents in Central and Eastern Europe. Journal of Social Issues, vol. 54:3, 547-561, Blackwell Publishers.
- MacEwen, S. A. & Burchell, B. (1994) 'And never the twain shall meet'? Gender Segregation and Work Histories. In MacEwen, S. A. (Ed.), Gender Segregation and Social Change, Oxford University Press.
- Masche, G. J. & Reitzle, M. (1999) Stichprobe und design. In R. K. Silbereisen & J. Zinnecker (Eds) Entwicklung im sozialen Wandel: Kindheit, Jugend und junges Erwachsenenalter im wiedervereinigten Deutschland 1991 bis 1996  
[Development in times of social change: Childhood, adolescence and young adulthood in reunited Germany]. Weinheim: Beltz PVU, 169-186.
- MacLeod, D. (2001) Not enough professors to go round. Education Guardian, May 3

- Magnusson, D. & Stattin, H. (1998) Person-context interaction theories. In R. Lerner, R., Theoretical models of human development, Vol. 1 Handbook of child psychology, Damon, W. (series Ed.) Jeffrey W. Brown (pub.) p685-759.
- Marais, M. A. (1995) The distribution of resources in South Africa. Economics of Education Review, vol.14:1, 47-52.
- Marsh, D. (Ed.) (1983) Vocational education and training in the German Democratic Republic. Comparative Papers in Education, Number 11, The Further Education Staff College, Coombe Lodge, Bristol.
- Marsh, H. W. (1990) Influences of internal and external frames of reference on the formation of Math and English self-concepts. Journal of Educational Psychology, 82, 107-116.
- Marx, K & Engels, F. ([1848] 1969) Selected Works, Vol. 1, 98-137, Progress Publishers, Moscow, USSR.
- Mau, W. C., Domnick, M. & Ellsworth, R. A. (1995) Characteristics of female students who aspire to science and engineering or homemaking occupations. Career Development Quarterly. 1995 Jun; vol. 43:4, 323-337.
- Mazer, G. E. (1971) The effects of social class stereotyping on teacher expectation. Psychology in the Schools, 8, 373-8.
- McDonald, J. L.; Jessell, J. C. (1992) Influence of selected variables on occupational attitudes and perceived occupational abilities of young adolescents. Journal of Career Development, vol.18:4, 239-250.
- McGinn, P. V. (1976) Verbally gifted youth: Selection and description. In P. Keating, (Ed.) Intellectual talent: Research and development. Baltimore: The Johns Hopkins University Press.
- McKenna, A. E. & Ferrero, G. W. (1991) Ninth-grade students' attitudes toward nontraditional occupations. Career Development Quarterly, vol. 40:2, 168-181.
- Mendelson, S. & Crawford, P. (1998) Women in early modern England. Clarendon Press, Oxford.
- Meschke, L. L. & Silbereisen, R. K. (1998) The association of childhood play and adolescent-parent interactions with German adolescent leisure participation. Journal of Adolescent Research, vol.13:4, 458-486.
- Meyer, S. & Schulze, E., (1992) Familie im Umbruch: Zur Lage der Familien in der ehemaligen DDR [Families in times of change: The case of the former GDR.]



- Schriftenreihe des Bundesministeriums für Familie und Senioren, Band 7,  
Publisher Kohlhammer, Stuttgart, Berlin, Köln.
- Millett, K. (1977) Sexual Politics. London: Virago.
- Mitchell, J. E., Baker, L. A., & Jacklin, C. N. (1989) Masculinity and femininity in twin children: Genetic and environmental factors. Child Development, vol.60:6, 1475-1485
- Mork, A. (1997) Warum eigentlich 'ungleiche' Schwestern? [Why 'unequal' sisters?] in Schäfer, H. (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland. [Unequal Sisters? Women in East and West Germany] Haus der Geschichte der Bundesrepublik Deutschland [History of Germany Building] Bonn.
- Moses, M. S. (1997) The pipeline and student perceptions of schooling: Good news and bad news. Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, March 24-28, 1997).
- Murrell, A. J., Frieze, I. H. & Frost, J. L. (1991) Psychology of Women Quarterly, vol. 15:1, 103-126.
- Neft, N. & Levine, A. D. (1997) Where women stand: An international report on the status of women in 140 countries, 1997-1998. Random House, New York.
- Newcome, N. & Dubas, J. S. (1987) Individual differences in cognitive ability: Are they related to timing of puberty? In Lerner, R. M. & Foch, T. T. (Eds.) Biological-Psychosocial Interactions in Early Adolescence: A Life-Span Perspective, Hillsdale, NJ, Erlbaum, 249-302.
- Nickel, H. M. (1997) Leitbilder und Alltagsrealität [Model and Everyday Reality]. In Schäfer, H. (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland. [Unequal Sisters? Women in East and West Germany] Haus der Geschichte der Bundesrepublik Deutschland [History of Germany Building] Bonn.
- Nickel, H. M., (1991) Geschlechterverhältnis in der Wende? In Frauen in den Neuen Bundesländern. Rückzug in die Familie oder Aufbruch zur Gleichstellung in Beruf und Familie? Gesprächskreis Frauenpolitik, no. 2 Friedrich Ebert Stiftung [Gender Relations after Reunification? in Women in the New Federal States. Back to the family or the start of equal opportunity in work and family?] Bonn, 5-16.
- Nickel, H.M. (1992) Women in the German Democratic Republic and in the New Federal States: Looking backwards and forwards. German Politics & Society, Issue 24 & 25, Winter 1991-1992, 34-52.

- Nickel, H. M. (1993) Mitgestalterinnen des Sozialismus [Women as creators of socialism]. Berlin.
- Nolte, C. (1997) Ungleiche Schwestern?: Kommentar [Unequal Sisters?: Commentary]. In Schäfer, H. (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland [Unequal Sisters? Women in East and West Germany] Haus der Geschichte der Bundesrepublik Deutschland [History of Germany Building] Bonn.
- O'Brien, K. M. & Fassinger, R. E. (1993) A causal model of the career orientation and career choice of adolescent women. Journal of Counselling Psychology, vol.40:4, 456-469.
- O'Brien, V., Martinez-Pons, M. & Kopala, M. (1999) Mathematics self-efficacy, ethnic identity, gender and career interests related to Mathematics and Science. Journal of Educational Research, vol.92:4, 231-35.
- Ohio University Study (1996) Gender and employment: Current statistics and their implications. Ohio State University, Columbus, USA in Equity Issues, vol.3:1, Fall 1996.
- Oppenheimer, V. (1970) The female labor force in the United States: Demographic and economic factors governing its growth and changing composition. Westport Con., Greenwood Press.
- Pedersen, N. L., Plomin, R., McClearn, G. E., & Friberg, L (1988) Neuroticism, extraversion, and related traits in adult twins reared apart and together. Journal of Personality and Social Psychology, 55, 950-957.
- Petersen, A. C & Crockett, L. C (1985) Pubertal timing and grade effects on adjustment. Journal of Youth and Adolescence, 14, 191-206.
- Peterson, M. (1997) Low-SES literacy backgrounds: effects on formal schooling. ERIC documentation: ED408559.
- Phillips, S. D. & Imhoff, A. R. (1997) Women and Career Development: A Decade of Research. Annual Review of Psychology, 48: 31-59, Annual Reviews Incorporated.
- Pisapia, J. (1994) Technology: The equity issue. ERIC documentation: ED411340
- Plomin, R. & DeFries, J. C. (1999) The genetics of cognitive abilities and disabilities. In, Ceci, S. J. & Williams, W. M. (Eds.) The Nature-Nurture Debate, Blackwell Publishers.
- Plomin, R. (1994) Genetics and experience: The interplay between nature and nurture. Individual differences and development series, vol. 6, Sage.



- Plomin, R., McClearn, G.E., Pedersen, N.L., Nesselroade, J.R., & Bergeman, C.S. (1989) Genetic influence on adults' ratings of their current family environment. Journal of Marriage and the Family, 51, 791-803.
- Poole, M. (1990) Determining career orientations in women from different social-class backgrounds. Sex Roles, vol.23:9-10, 471-490.
- Putnam, R. D. (1976) The comparative study of political elites. Englewood Cliffs, New Jersey: Prentice-Hall.
- Pulkkinen, L, Ohranen, M, & Tolvanen, A. (1999) Personality Antecedents of Career Orientation and Stability among Women Compared to Men. Journal of Vocational Behavior; vol.54:1, 37-58.
- Quack , S. & Maier, F. (1994) From state socialism to market economy - women's employment in East Germany. Environment and Planning, Vol. 26, 1257-1276.
- Rainey, L. M. & Borders, L.-D. (1997) Influential Factors in Career Orientation and Career Aspiration of Early Adolescent Girls. Journal of Counseling Psychology; vol.44:2, 160-72.
- Rand, M. & Miller, A-L. (1972) A Developmental Cross-Sectioning of Women's Careers and Marriage Attitudes and Life Plans. Journal of Vocational Behavior, vol.2:3, 317-331.
- Rees, T. (1992) Women and the Labour Market, Routledge.
- Regina University (1992) Older women and poverty: Lifecycle learning sheet. Report for the Department of National Health and Welfare, Ottawa, Canada. Publication of Creating Prairie Cronies, the Saskatchewan older women's network, ED366739.
- Reitzle, M. (1999) Anhaltende Kluft oder Annäherung zwischen Ost und West? Ausgewählte demoskopische Befunde [Persistent differences or coming together between East and West? Results from opinion poll surveys]. In Silbereisen, R.K., and Zinnecker, J (Eds.) Entwicklung im sozialen Wandel [Development in times of social change] Belz, 63-80.
- Reitzle, M., Vondracek, F. W., & Silbereisen, R. K.(1998) Timing of school-to-work transitions: A developmental-contextual perspective. International Journal of Behavioral Development, vol. 22:1, 7-28.
- Reskin, B. F. & Hartmann, H. I. (Eds.) (1986) Women's work, men's work: Sex segregation on the job. National Academy Press.

- Reskin, B. F. & Roos, P. A. (1990) Job queues, gender queues. Philadelphia: Temple University Press.
- Rheingold, H. & Cook, K. V. (1975) The Contents of Boys' and Girls' Rooms as an Index of Parents' Behavior. Child Development, vol.46:2, 459-463.
- Roberts, T.-A. (1991) Gender and the influence of evaluations on self-assessments in achievement settings. Psychological Bulletin, vol.109:2, 297-308.
- Rocha, S. A., Rotterdam, A. M., & Trautner, H. M. (1996) Men and women in gender typical and gender atypical educational fields. Poster presented at the 26th International Congress of Psychology, Montreal, Canada, August 16-21 1996.
- Rosenberg, D. J. (1991) Shock Therapy: GDR Women in Transition from a Socialist State to a Social Market Economy. Signs: Journal of Women in Culture and Society, vol.17:1, University of Chicago Autumn.
- Rowe, D. C. (1994) The Limits of Family Influence: Genes, Experience, and Behavior. The Guilford Press.
- Rubin, J., Provenzano, F., & Luria, Z. (1974) The eye of the beholder: Parent's views on sex of newborns. American Journal of Orthopsychiatry, 44, 512-519.
- Rule, W. (2000) Contextual barriers and benefits to women's parliamentary and cabinet representation in 68 democracies. Paper prepared for presentation at the 18th world congress of the International Political Science Association, August 1-5 2000, Quebec City.
- Rutter, M., Quinton, D. & Hill, J. (1991) Adult outcome of institution-reared children: Male and Females compared. Straight and devious pathways from childhood to adulthood Cambridge University Press, 135-157.
- Saarni, C. (1984) An observational study of children's attempts to monitor their expressive behavior. Child Development, 55: 1504-1513.
- Savickas, M.L. (1985) Identity in Vocational Development. Journal of Vocational Behaviour, 27, 327-329.
- Scarr, S. (1992) Developmental theories for the 1990s: Development and individual differences. Child Development, 63, 1-19.
- Schäfer, H. (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland. [Unequal Sisters? Women in East and West Germany] Haus der Geschichte der Bundesrepublik Deutschland. [History of Germany Building] Bonn.
- Schenck, C. (1990) Die Tageszeitung, August 31, 1990, Berlin Edition. Cited in Rosenberg, 1991, 133.



- Schmidt, R., (1991) Neue Rechte für Frauen in Gesamtdeutschland in Nach der Vereinigung Deutschlands: Frauen fordern ihr Recht. Gesprächskreis Frauenpolitik, no. 2 Friedrich Ebert Stiftung [New rights for women in unified Germany in After unification: Women demand their rights] Bonn January 1-10.
- Schmidt-Kolmer, E. (Ed.) (1968). Pädagogische Aufgaben und Arbeitsweise der Krippen [Educational tasks and care regulations for nursery schools]. Berlin, Germany: Verlag Volk und Gesundheit.
- Schmitt-Rodermund, E. & Christmas-Best, V. E. (1999). Kranführer oder Krankenschwester – berufliche Vorstellungen Jugendlicher aus Ost und West {Crane-driver or nurse - career plans of young people in East and West Germany}. In R. K. Silbereisen & J. Zinnecker (Eds) Entwicklung im sozialen Wandel: Kindheit, Jugend und junges Erwachsenenalter im wiedervereinigten Deutschland 1991 bis 1996 [Development in times of social change: Childhood, adolescence, and young adulthood in reunited Germany]. Weinheim: Beltz PVU. 169-186.
- Schneider, E. (1994) Die Politische Funktionselite der DDR: Eine Empirische Studie zur SED-Nomenklatura. [The political elites of the GDR: An empirical study of the SED nomenclature] Westdeutscher Verlag, Opladen.
- Schneider, F. W. & Coutts, L. M. (1985) Person orientation of male and female high school students: To the educational disadvantage of males? Sex Roles, vol.13:1/2, 47-63.
- Schulenberg, J. E., Vondracek, F. W. & Crouter, A. C. (1984) The influence of the family on vocational development. Journal of Marriage and the Family, 10, 129-143.
- Schulenberg, J. E., Goldstein, A. E., & Vondracek, F. W. (1991) Gender differences in adolescent's career interests: Beyond main effects. Journal for Research on Adolescence, 1:1, 37-61.
- Scott, MacEwen, A. (1994) Gender segregation and the SCEL research. In A. MacEwen Scott (Ed.) Men and women in changing labour markets. Oxford University Press, New York.
- Scott, MacEwen, A. & Burchell, B. (1994) The gender wage differential and discrimination in the six SCEL local labour markets. In A. MacEwen Scott (Ed.) Men and women in changing labour markets. Oxford University Press, New York.

- Sears, P. S. (1979) The Terman genetic studies of genius, 1922-1972. In A. H. Passow (Ed.) The gifted and the talented: Their education and development. The seventy-eighth yearbook of the National Society of the Study of Education. Chicago, University of Chicago Press.
- Selkow, P. (1984) Maternal employment: Effects on daughters' and sons' early career aspirations. Paper presented at the annual meeting of the American Psychological Association, Toronto.
- Serbin, L. and O'Leary, K. (1975) How nursery schools teach girls to shut up. Psychology Today, 9:7, 56-58.
- Sewell, W. H. & Hauser, R. M. (1975) Education, Occupation, and Earnings. Achievement in the Early Career. Academic Press Inc., 111 Fifth Avenue, New York, New York 10003.
- Sharf, R. S. (1992) Applying career development theory to counselling. Wadsworth, Belmont, California.
- Shaver, A. V.; Walls, R. T. (1998) Effect of parent involvement on student reading and mathematics achievement. Journal of Research and Development in Education, vol.31:2, 90-97.
- Shaywitz, B. & Shaywitz, S. (1995) Sex differences in the functional organisation of the brain for language. Nature, 373, 607-609.
- Shell (1981) Jugend '81. Lebensentwürfe, Alltagskulturen und Zukunftsbilder. Hamburg: Shell
- Shell Youth Study (1992) Jugend '92: Lebenslagen, Orientierungen und Entwicklungsperspektiven im vereinigten Deutschland [Life paths, orientations and developmental perspectives in reunified Germany] A. Fischer (Ed.) Methodenberichte, Tabellen, Fragebogen [Methodology, Tables, and Questionnaire] Leske & Budrich, Jugendwerk der Deutschen Shell.
- Sheridan, J. T. (1997) The effects of the determinants of women's movement into and out of male-dominated occupations on occupational sex segregation. Wisconsin University, Madison. Center for Demography and Ecology.
- Shields, S. A. (1975) Functionalism, Darwinism, and the psychology of women: A study in social myth. American Psychologist, vol.30:7, 739-754.
- Siegal, M. (1985) Children, parenthood, and social welfare in the context of developmental psychology. Clarendon Press, New York, NY.



- Silbereisen, R. K., Schwarz, B. & Rinker, B. (1995) The Timing of Psychological Transitions in Adolescence: Commonalities and Differences in Unified Germany. In J. Youniss, (Ed.) After the Wall: Family Adaptations in East and West Germany. New Directions For Child Development. Number 70, Josey-Bass.
- Silbereisen, R. K. & Juang, L. (1999) Supportive parenting and adolescent adjustment across time in former East and West Germany. Journal of Adolescence, vol.22:6, 719-736.
- Siltanen, J. (1990) Social change and the measurement of occupational segregation by sex: An assessment of the sex ratio index, Work Employment and Society, vol.4, 1-29.
- Smith, C. & Lloyd, B. (1978) Maternal behavior and perceived sex of infant: Revisited. Child Development, vol.49:4, 1263-65.
- Smith, E. J. (1982) The black female adolescent: A review of the educational, career, and psychological literature. In Psychology of Women Quarterly, vol.6:3, 261-288.
- Smith, J. P. & Ward, M. P. (1984) Women's wages and work in the twentieth century, RAND Corporation, October.
- Smith-Maddox, R. (1999) The social networks and resources of African American eighth graders: Evidence from the National Educational Longitudinal Study of 1988. Adolescence, vol.34:133, 169-183.
- Smutts, B. (1995) The evolutionary signs of patriarchy. Human Nature, vol.6:1, 1-32.
- Snow, M.E., Jacklin, C. N., & Maccoby, E.E (1983) Sex-of-child differences in father-child interaction at one year of age. Child Development, 54, 227-232.
- Solga, H. (1995) Auf dem Weg in eine klasselose Gesellschaft? Klassenlagen und Mobilität zwischen Generationen in der DDR [On the way to a classless society? Class positions and mobility between the generations in the GDR] Berlin: Akademie Verlag.
- Spence, J. T. and Helmrich, R. L. (1978) Masculinity and femininity: Correlates and antecedents. Austin: University of Texas Press.
- Staatsverlag der Deutschen Demokratischen Republik, (1980) Berlin. Statistisches Taschenbuch der Deutschen Demokratischen Republik.
- Statistisches Bundesamt: Mikrozensus 1997: Stand und Entwicklung der Erwerbstätigkeit (Employment: current situation and development).

- Statistisches Bundesamt (1997) Datenreport 1997: Zahlen und Fakten über die Bundesrepublik Deutschland [Data report 1997: Facts and Figures on the German Republic].
- Statistisches Bundesamt (1998) Bevölkerung nach Altersgruppen (Population by age).
- Stattin, H. & Magnusson, D. (1990) Pubertal maturation in female development. Hillsdale, NJ, England: Lawrence Erlbaum Associates.
- Stecher, L. (1999) Social capital, school-related habitus, and academic achievement of children. Paper presented at the International Conference and Poster Exhibition, Childhood and adolescence in Germany before and after unification, May 11-14, Jena, Germany.
- Stericker, A.B. & Johnson, J.E. (1977) Sex role identification and self-esteem in college students: Do men and women differ? Sex Roles, 3, 19-26.
- Stern, S. (1997) Working Women in Contemporary Germany. Roles, Attitudes, and a Handful of Success Stories. Inter Nations, Bonn.
- Stirken, A. 1997 Beruf Hausfrau (Profession, Housewife) in Schäfer, H. (Ed.) Ungleiche Schwestern? Frauen in Ost- und Westdeutschland. [Unequal Sisters? Women in East and West Germany] Haus der Geschichte der Bundesrepublik Deutschland. [History of Germany Building] Bonn.
- Stone, D. A. (1991) Gatekeeping experts and the control of status passages. In Heinz, W. R. (Ed) The life course and social change: Comparative perspectives. Status passages and the life course, Vol. II. Deutscher Studien Verlag, Weinheim, 203-220.
- Super, D. E. (1980) A life-span, life-space approach to career development. Journal of Vocational Behavior, 16, 282-298.
- Super, D. E. (1953) A theory of vocational development. American Psychology, 8, 185-190.
- Tauber, M. A. (1979) Parental socialization techniques and sex differences in children's play. Child Development, 50, 225-234.
- Taylor, G. R. (2002) Theories of matriarchy and patriarchy. Sex in History, [www.ourcivilisation.com](http://www.ourcivilisation.com).
- Taylor, P J., Leder, G. C., Pollard, G. H., & Atkins, W. J. (1996) Gender differences in mathematics: Trends in performance. Psychological Reports, vol.78:1, 3-17.



- Tinsley, D.J & Faunce, P.S. (1980) Enabling, facilitating, and precipitating factors associated with women's career orientation. Journal of Vocational Behavior, 17, 183-194.
- Tomlinson-Keasey, C. & Gomel, J. N. (1997) Antecedent life events and consequences for homemakers and women employed in atypical, typical, and androgynous professions. In, Lachman, M. E. & Boone James, J. (Eds.) Multiple paths of midlife development. The University of Chicago Press: Chicago and London, 345-374.
- Trappe, H. & Rosenfeld, R. A. (2001) Geschlechtsspezifische segregation in der DDR und der BRD: Im Verlauf der Zeit und in Lebensverlauf [Occupational gender segregation in the GDR and FRG: Across time and throughout the life-course]. In Heinz, B. (Ed.) Sonderheft der Kölner Zeitschrift für Soziologie und Sozialpsychologie: Geschlechtersoziologie, 41, 152-181.
- Trivers, R. L. (1972) Parental investment and sexual selection. In B. Cambell (Ed.) Sexual selection and the descent of man, 136-179, Chicago, Aldine.
- Trusty, J., Robinson, C. R.; Plata, M. & Ng, K.-M. (2000) Effects of gender, socioeconomic status, and early academic performance on post-secondary educational choice. Journal of Counseling and Development, vol. 78:4, 463-472.
- U.S. Department of Labor, Women's Bureau (1998) Working women count! A report to the Nation. May.
- University of Missouri-Saint Louis (1993) Governments reports- Overseas Business Reports (West Germany)  
[http://www.umsl.edu/services/govdocs/obr/obr\\_0004.htm](http://www.umsl.edu/services/govdocs/obr/obr_0004.htm)
- USDOC (1993) International Trade Association. West Germany – Overseas Business Report – Marketing – OBR9102.  
[http://www.umsl.edu/services/govdocs/obr/obr\\_0004.htm](http://www.umsl.edu/services/govdocs/obr/obr_0004.htm)
- Valian, V. (1998) Why so slow? The advancement of women. MIT Press, Cambridge, Massachusetts.
- Vanderwater, E. A. & Stewart, A. J. (1997) Women's career commitment patterns and personality development. In, Lachman, M. E. & Boone James, J. (Eds.) Multiple paths of midlife development. The University of Chicago Press: Chicago and London, 375-410.
- Vollmer, F. (1984) Sex differences in personality and expectancy. Sex Roles, 11, 1121-1139.

- Vondracek, F. W., Lerner, R. M. & Schulenberg, J. E. (1986) Career development: A developmental approach. Lawrence Erlbaum Ass. Inc., New Jersey.
- Vondracek, F. W., Reitzle, M., & Wiesner, M. (1999) Vocational preferences of early adolescents: Their development in social context. Journal of Adolescent Research, vol.14:3, 267-288.
- Walby, S.(1986) Patriarchy at Work. Cambridge. Polity Press.
- Walby S (1990) Theorising patriarchy. Oxford Blackwell.
- Walby, S. (1997) Gender transformations. Routledge.
- Walker, S. & Barton, L., (1989) Gender, Class and Education. Falmer.
- Williamson, E. (2002) Battling Teutonic tokenism. Wall Street Journal (European edition) February 27, 2002 .
- Wallace, C (1991) New patterns of gender identity in youth? Or old ones reconstructed? In Heinz, W. R. (Ed) The life course and social change: Comparative perspectives. Status passages and the life course, Vol. II. Deutscher Studien Verlag, Weinheim, 71-90.
- Walper, S. (1995) Youth in a Changing Context: The Role of the Family in East and West Germany. In Youniss, J. (Ed.)After the Wall: Family Adaptations in East and West Germany, New Directions for Child Development, No. 70, Winter, 3-21, Jossey-Bass Publishers.
- Weichold, K., Schmitt-Rodermund, E, & Silbereisen, R.K.S. (2000) Links between timing of puberty and behavioral indicators of individuation. VIIIth Biennial Meeting of the Society for Research on Adolescence, Chicago, USA, March 30-April 2, 2000.
- Westen, D; (1999) The scientific status of unconscious processes: Is Freud really dead? Journal of the American Psychoanalytic Association, vol.47:4, 1061-1106.  
Special Issue: Between the millennia: Freud and psychoanalysis.
- Wiesner, M. E. (1993) Women and gender in early modern Europe. Cambridge University Press
- Will, J., Self, P., & Datan, N. (1976). Maternal behavior and perceived sex of infant. American Journal of Orthopsychiatry, 46, 135-139.
- Williams, C. L. (1989) Gender differences at work :Women and men in nontraditional occupations, University of California Press.
- Williams, C. L. (Ed.) (1993) Doing 'Women's Work:' Men in Nontraditional Occupations, Sage Publications.



- Winkler, G. (Ed.) (1990) Frauenreport '90 [Report on Women] Report der Beauftragte des Ministerrates für die Gleichstellung von Frauen und Männern, [Report to the Ministry for the equalisation of men and women] Dr. Marina Beyer, Verlag die Wirtschaft. Berlin.
- Woche im Bundestag [The Week in Parliament newsletter] (1994) "Vor 'Struktureller Auszehrung' Gewarnt" [Warning of structural decline] June, Bonn.
- Wolf, V. (1945) 'A Room of Ones Own' The Penguin Group. (First published 1928.)
- Yee, D. K. and Eccles, J. S. (1988) Parent perceptions and attributions for children's math achievement. Sex Roles, vol. 19:5/6, 317-333.
- Youniss James (Ed.) (1995) After the wall: Family adaptations in East and West Germany. New Directions for Child Development, no 70, Jossey-Bass Inc.
- Zady M. F., Portes, P. R., Del Castillo, K. & Dunham, R. M. (1988) When low SES parents cannot assist their children. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA, April 13-17, 1998.
- Zahlen-Fibel: Ergebnisse der Arbeitsmarkt und Berufsforschung in Tabellen (1997) [Results from labour market and occupational research in table format] Inst. für Arbeitsforschung der Bundesanstalt für Arbeit [Inst. for labour market research from the Federal Labour Office] Nürnberg.
- Zahlen zur wirtschaftlichen Entwicklung der BRD (1993) [Figures on the economic development of the FRG,] Institute of the German Economy, Cologne.
- Ziegler, A., Kuhn, C., & Heller, K. A., (1998) Implizite Theorien von gymnasialen Mathematik- und Physiklehrkräften zu geschlechtsspezifischer Begabung und Motivation. [Implicit theories of gymnasium mathematics and physics teachers on gender-specific giftedness and motivation.] Psychologische Beiträge, vol.40:3/4, 271-287.
- Zucherman, D. (1981) Family background, sex-role attitudes and life-goals of technical college and university students. Sex Roles, 7, 1109-1126.

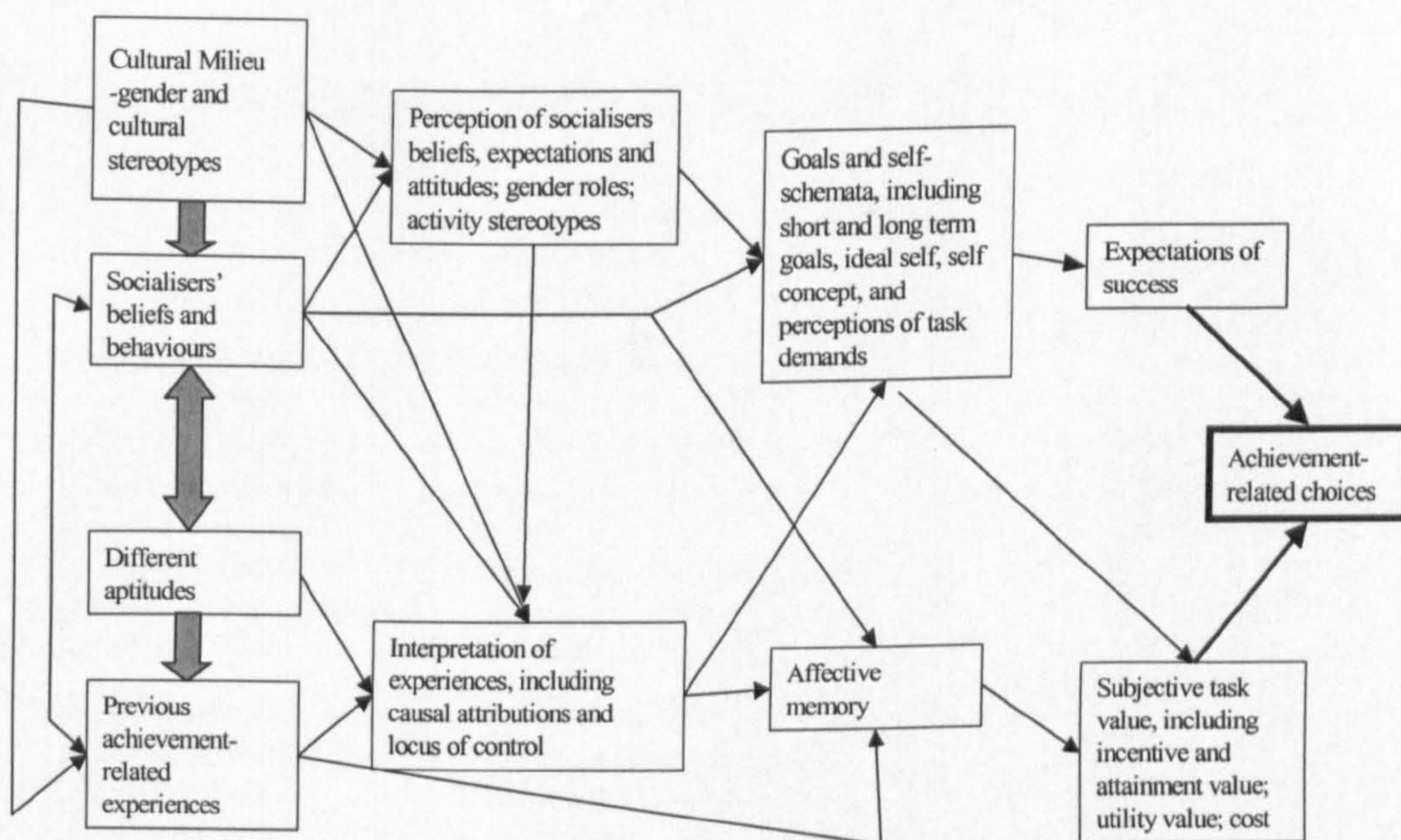
**Interviews with Jacqueline von Lepinski, Katrin Müller, Annett Weise, Karina Weichold, Martin Pinquart, Peter Titzman, of Jena University.** Having grown up in the GDR, these colleagues provided invaluable information, and filled many gaps in the literature, concerning processes involved in education, selection, and training for jobs before reunification.



## APPENDICES

## Appendix to Chapter 2

Eccles's theoretical model of achievement-related choices, 1983



Model developed by Eccles (Parsons), Adler, Futterman, Goff, Kaczala, Meece, and Midgley, 1983



Occupational Sub Category Codes	Skill or Qualification Level within each Occupational Classification Group
++10 e.g. 1410	Skilled workers e.g. skilled workers in health services and caring
++20 e.g. 1420	Skilled workers e.g. skilled workers in medicine and medical aids
++30 e.g. 2430	Meisters e.g. machine installations Meister
++40 e.g. 2440	Meisters e.g. maintenance Meister
++50 e.g. 4050	Technical college qualified e.g. textile engineer
++60 e.g. 4060	Technical college qualified e.g. clothing engineer
++70 e.g. 4070	University level qualified e.g. textiles processing engineer
++80 e.g. 4080	Unskilled or semiskilled workers e.g. textiles and clothing manufacturing assistants
++90 e.g. 9990	Other e.g. no answer given

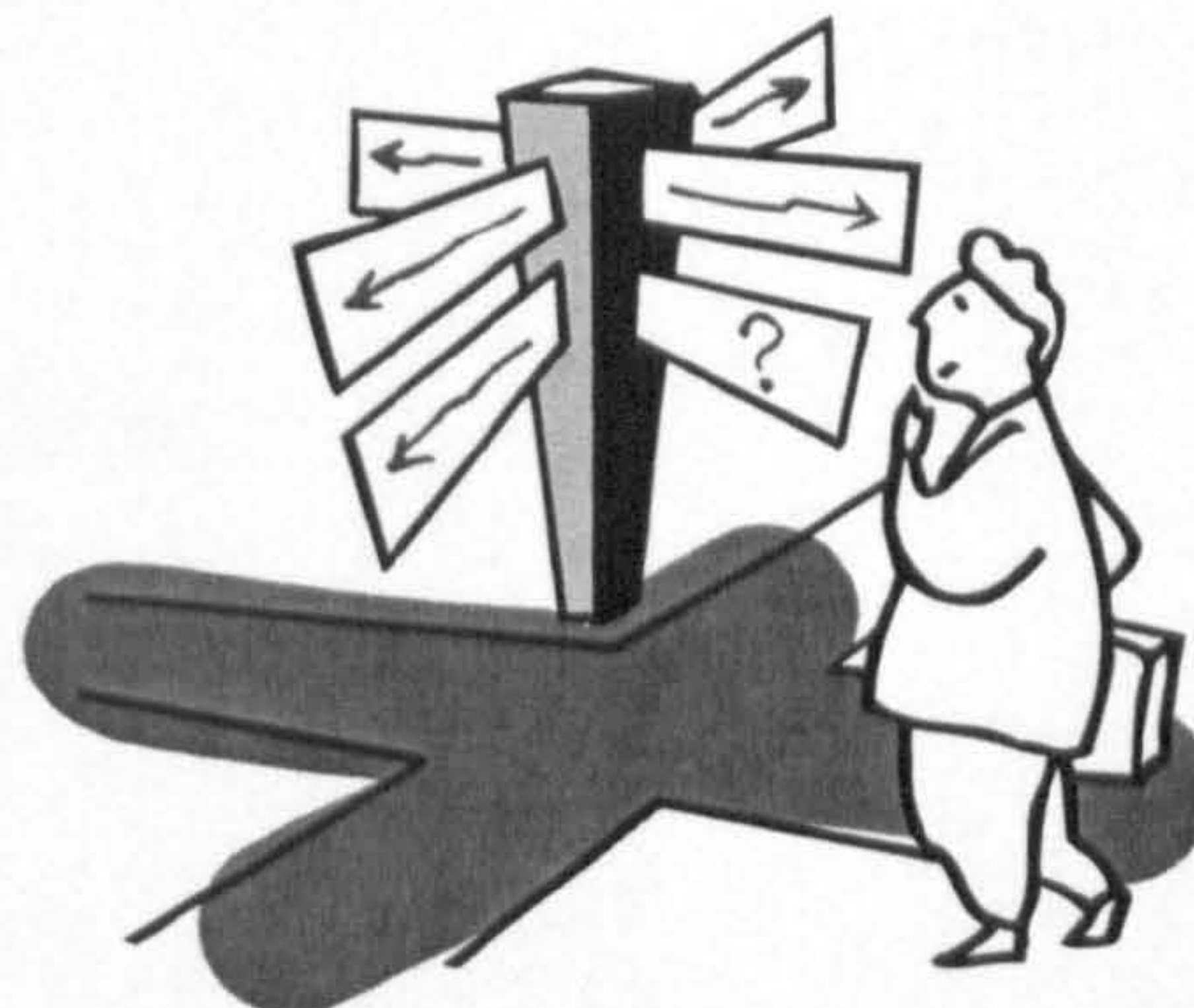
Table 1: Sub-main classification coding scheme GDR 1981

**GDR, 1981: Occupational Categories with the Title Engineer by % Female**

	%f		%f		%f
mining engineer (FS)	4	construction eng water systems (HS)	26	construction eng railways (HS)	41
traffic engineer (HS)	6	telephone eng (FS)	26	paper processing eng (HS)	42
forestry engineer (HS)	7	fishery engineer (HS)	27	agrarian engineer (HS)	42
forestry engineer (FS)	8	process. tech engineer HS	30	construct eng scaffolding etc (FS)	44
traffic engineer (FS)	9	glass and ceramics eng (FS)	30	automation engineer (FS)	45
electro engineer (FS)	10	agrarian engineer (FS)	30	paper processing eng (FS)	46
engineers forestry and fish	10	construction engineers (HS)	30	fisheries engineer (FS)	47
chemical process engineer	11	architectural eng (HS)	30	foodstuffs engineer (FS)	49
process. tech engineer FS	11	other construction eng (HS)	30	telephone eng (HS)	49
engineer-electro tech (HS)	11	agrarian eng plant production (FS)	31	foodstuffs engineer (HS)	51
energy engineer (HS)	13	construction engineers (FS)	31	meteorology engineer	52
machine engineer (FS)	13	eng water systems (FS)	31	leather fur processing eng (FS)	53
textile cleaning eng (FS)	13	water industry eng (FS)	33	glass engineer (HS)	62
energy engineer (FS)	16	construction materials engineer (FS)	33	chemicals engineer	64
machine engineer (HS)	17	construction materials engineer (HS)	33	chemical laboratory engineer	64
precision eng (HS)	17	construction eng civil/road/traffic HS	33	inorganic/organic chemical engineer	69
construction eng transport (FS)	17	bio medical technician	34	med lab tech engineer	69
word processing engineer (HS)	18	automation engineer (HS)	34	bio-engineers(FS)	69
mining engineer (HS)	21	water industry eng (HS)	34	veterinary engineer (FS)	69
geological engineer (FS)	22	structural engineer (FS)	34	text processing eng (HS)	72
word processing engineer (FS)	22	leather processing eng (HS)	35	textile engineer (FS)	73
metallurgy /materials eng (FS)	23	agriculture, forestry, and fish (HS)	35	graphic processing eng (HS)	78
precision engineer (FS)	23	plastics processing engineer	36	bio-technician	79
materials engineer (HS)	24	civil engineering (FS)	38	clothing engineer (FS)	83
agrarian eng animal production (FS)	26	graphics engineer (FS)	41	pharmacology eng (FS)	94

Table 2: GDR 1981: Engineers by percent female.





# Berufswahl und Berufsweg von Frauen in Deutschland

Verona E. Christmas-Best, MA

University of Jena  
and  
The Institute of Education, London



# Berufswahl und Berufsweg von Frauen in Deutschland

### **Sektion A : Bevor Sie den ersten Beruf gelernt haben:**

- 1. Haben Sie sich als Kind oder Jugendliche für Technik und technische Fragen interessiert?**

Ja / Nein

Wenn Ja, bitte sagen Sie mir wie stark war Ihr Interesse? (Wenn Nein, bitte gehen Sie zu Frage 3.)

sehr  
ziemlich stark  
etwas  
kaum  
oder gar nicht


2. In welche Richtung gingen damals Ihre technischen Interessen? Es gibt hier eine Liste mit Möglichkeiten. Was davon interessierte Sie?

**Technisches Spielzeug, Basteln**

**Auto, Motorrad**

**Elektrotechnik**

**Computer**

**Photo, Optik**

**Videotechnik**

**Funk, Fernsehen, Fernmeldetechnik**

**Bauen, technisches Zeichnen**

**Motoren, Maschinen**

**Andere (bitte hier eintragen)**

[illegible]

3. Welches waren Ihre Lieblingsfächer in der Schule? Bitte geben Sie jedem Fache eine „Note“ von 1 (mochte ich sehr) bis 5 (mochte ich überhaupt nicht). Wenn Sie eines der aufgelisteten Fächer in der Schule nicht hatten, lassen Sie die Angabe einfach weg.

Biologie	
Chemie	
Deutsch	
Erdkunde/Geografie	
Geschichte	
Mathematik	
Musik	
Englisch	
Russisch	
Französisch	
Physik	
Religion	
Sozialkunde/ Gesellschaftslehre	
Sport	
Kunstunterricht	
Kochen/ Hauswirtschaft	
Anderes Fach (bitte angeben)	



4. Denken Sie jetzt an die Zeit, als Sie im Alter so zwischen 3 und 12 Jahren waren. Wie häufig haben Sie die Spiele auf dieser Liste gespielt?

	nie	gelegentlich	häufig	sehr häufig
Vater, Mutter und Kind Spiele				
Kinderküche, Puppenküche				
Pupp doktor				
Cowboy und Indianer				
Räuber und Gendarm				
Krieg, Soldaten spielen, mit Spielzeugpistolen				
Theater spielen				
Sich verkleiden				
Malen, zeichnen				
Phantasiespiele				
Ein Buch lesen				
Ein Museum besuchen, ins Theater/Oper gehen				
Ausflüge machen, um Sehenswürdigkeiten zu besichtigen				

5. Als Sie noch bei Ihren Eltern lebten, welche der Tätigkeiten auf dieser Liste haben Sie für Ihre Eltern gemacht?

	regelmäßig	öfter	selten	nie
Die Wäsche waschen, bügeln etc.				
Zimmer, Wohnung aufräumen, sauber machen				
sich um ein Kind kümmern (Enkel, Geschwister)				
kochen, Essen zubereiten				
Geschirr spülen, andere Küchenarbeit				
Einkaufen				

6. Denken Sie jetzt bitte einmal an Ihre Schulzeit zwischen der 1. und der 6. Klasse, als Sie zwischen 6 und 12 Jahren waren. Wie stark treffen für diese Zeit folgende Aussagen auf Sie und Ihr Elternhaus zu?

	trifft sehr zu	trifft zu	trifft weniger zu	trifft überhaupt nicht zu
In unsere Familie haben wir gemeinsam Musik gemacht				
Ich habe in den Büchern gelesen, die es zu Hause gab				
Meine Eltern setzten später große Hoffnung auf mich				
Meine Familie hielt mich für ein begabtes Kind				
In meiner Familie haben wir gemeinsam Sport getrieben				
In meiner Familie haben wir gemeinsam gelesen				
Meine Eltern haben mir bei den Hausaufgaben regelmäßig geholfen				
Mein Eltern hatten Hobbys, die ich als Kind übernommen habe				



7. Welchen allgemeinbildenden **Schulabschluss** haben Ihr Vater und Ihre Mutter?

für die ehemalige DDR

	Vater	Mutter
keinen Abschluss		
Abschluss 8 Klasse		
Abschluss 10 Klasse		
Abitur		

für die ehemalige BRD  
(oder vor der Teilung  
Deutschlands)

	Vater	Mutter
keinen Abschluss		
Hauptschulabschluss		
Realschulabschluss (mittlere Reife) oder gleichwertigen Abschluss		
Abitur oder gleichwertige Abschluss		

8. Wie heißt der Beruf, den Ihr Vater und Ihre Mutter ursprünglich gelernt haben?

Vater

Mutter

9. Welchen beruflichen **Ausbildungsabschluss** haben Ihr Vater und Ihre Mutter?

für die ehemalige DDR

	Vater	Mutter
keine abgeschlossene Berufsausbildung		
Teilfacharbeiter		
Facharbeiter		
Meister		
Fachschulabschluss		
Hochschulabschluss		

für die ehemalige BRD  
(oder vor der Teilung  
Deutschlands)

	Vater	Mutter
keine abgeschlossene Berufsausbildung		
Berufsschulabschluss mit gewerblicher oder landwirtschaftlicher Lehre		
Berufsschulabschluss mit kaufmännischer oder sonstiger Lehre		
Berufsfachschulabschluss		
Meister- /Techniker – oder gleichwertiger		
Fachschulabschluss		
Fachhochschulabschluss (auch Ingenieurschulabschluss)		
Hochschulabschluss		

10. Welchen Beruf üben Ihre Eltern momentan aus (oder übten vor Ihrer Berentung aus)?

Vater?

Mutter?



**Sektion B: Jetzt ein paar Fragen über Ihre persönlichen Einstellungen.**

(Bitte beantworten Sie, welche der Aussagen Sie am besten kennzeichnet.)

1. Menschen sind sehr unterschiedlich, wenn es um Ihre Lebensziele geht. Manche sind sehr anspruchsvoll und ehrgeizig, andere finden dies weniger gut oder wichtig. Wie ist das bei Ihnen?

sehr anspruchsvoll und ehrgeizig	5	4	3	2	1	nicht so anspruchsvoll oder ehrgeizig
-------------------------------------	---	---	---	---	---	--

2. Im folgenden finden Sie unterschiedliche Meinungen darüber, wie man mit seinem Leben umgehen kann. Bitte markieren Sie die Meinung, der Sie eher zustimmen.

Bitte markieren Sie jeweils nur einer Meinung pro Block

<b>A1</b>	Ich betrachte mein Leben als eine Aufgabe für die ich da bin und für die ich alle Kräfte einsetze. Ich möchte in meinem Leben etwas leisten, auch wenn das oft schwer und mühsam ist.	
<b>oder</b>		
<b>A2</b>	Ich möchte mein Leben genießen und mich nicht mehr abmühen als nötig. Man lebt schließlich nur einmal, die Hauptsache ist doch, daß man etwas von seinem Leben hat.	

++++++

<b>B1</b>	Ich finde es wichtig, mein Leben so einzurichten, das ich ein ganz besonderer Mensch bin, der anders ist als alle anderen Menschen in meiner Umgebung.	
<b>oder</b>		
<b>B2</b>	Ich finde es wichtig, mein Leben so einzurichten, das betont wird, was ich mit anderen Menschen um mich herum gemeinsam habe und worin wir uns ähnlich sind.	

++++++

<b>C1</b>	Ich richte mein Leben so ein, dass ich Dinge tue, die mir sofort und direkt Etwas bringen und ich damit unmittelbar Nutzen oder Spaß verbinde.	
<b>oder</b>		
<b>C2</b>	Ich richte mein Leben so ein, dass ich Dinge tue, die sich langfristig auszahlen, so daß ich später im Leben einmal etwas davon habe.	

3. Menschen gehen ganz unterschiedlich mit der Zeit in Ihren Leben um und planen auch unterschiedlich. Wie gut beschreiben die folgenden Sätze Ihre Meinung dazu?

	überhaupt nicht	weniger gut	gut	sehr gut
Heute ist heute und morgen ist morgen.				
Was ich nächste Woche machen werde, überlege ich mir dann, wenn es soweit ist.				
Über Dinge, die morgen passieren können, soll man sich nicht so viele Gedanken machen.				
Ich vermeide es, mir unnötig viele Gedanken über das zu machen, was mir alles in der Zukunft passieren könnte.				
Meine berufliche Karriere plane ich Schritt für Schritt.				
Über meine weitere Zukunft sehe ich ziemlich klar.				
In der Jugend sollte man nicht gleich auf ein Ziel lossteuern, sondern möglichst vieles ausprobieren und sich vieles offen halten.				
Ein interessantes Leben in der Gegenwart ist für mich wichtiger als Planung für die Zukunft.				
Aus einem interessanten Irrweg kann man manchmal mehr profitieren als aus einer normalen Lebensplanung.				
Ich will mich von nichts abhängig machen, auch nicht von meinen eigenen Entscheidungen in der Vergangenheit.				
Im Leben ist alles Zufall.				
Mein Leben ist mehr durch Zufälle als durch meine eigenen Entscheidungen bestimmt.				
Ich glaube nicht, das man aus eigenen Erfahrungen viel lernen kann.				
Mir ist es ziemlich egal, was mit mir in der Zukunft geschieht.				



# **Sektion C: Jetzt etwas über Ihre berufliche Karriere:**

## **1. Was für einen Schulabschluß haben Sie bisher?**

für die ehemalige DDR

keinen Abschluss	
Abschluss 8 Klasse	
Abschluss 10 Klasse	
Abitur	

für die ehemalige BRD (oder  
des vereinte Deutschland)

keinen Abschluss	
Hauptschulabschluss	
Realschulabschluss (mittlere Reife) oder gleichwertigen Abschluss	
Abitur oder gleichwertige Abschluss	

## **2. Welchen Ausbildungsabschluss haben Sie bereits erreicht?**

für die ehemalige DDR

keine abgeschlossene Berufsausbildung	
Teilfacharbeiter	
Facharbeiter	
Meister	
Fachschulabschluss	
Hochschulabschluss	

für die ehemalige BRD (oder  
des vereinte Deutschland)

keine abgeschlossene Berufsausbildung	
Berufsschulabschluss mit gewerblicher oder landwirtschaftliche Lehre	
Berufsschulabschluss mit kaufmännischer oder sonstiger Lehre	
Berufsfachschulabschluss	
Meister/Techniker – oder gleichwertiger Fachschulabschluss	
Fachhochschulabschluss (auch Ingenieurschulabschluss)	
Hochschulabschluss	

3. Wie heißt der Beruf, den Sie erstmals gelernt haben?

4. Können Sie mir bitte sagen, aus welchem Grund Sie diesen Beruf gewählt haben? (Zum Beispiel keine andere Chance, Vermittlung durch Freunde)

5. War dies Ihr Idealberuf (als Sie im Teenageralter waren)?

**Ja /Nein**

6. Falls nein, was war für Sie Ihre Idealberuf als Sie im Teenageralter waren?



7. Üben Sie momentan einen anderen Beruf aus, als der den Sie erstmals erlernt hatten?

Ja /Nein
----------

8. Falls Ja, welchen Beruf üben Sie momentan aus? (Falls Nein, gehen Sie direkt zu Frage 11.)

9. Falls Ja, warum haben Sie einen anderen Beruf gewählt?

10. Falls Ja, warum haben Sie zum diesem besonderen Beruf gewechselt?

11. Ist der Beruf, den Sie momentan ausüben, ideal für Sie?

Ja /Nein
----------

12. Falls Nein, was wäre jetzt für Sie der ideale Beruf?

-und warum?

13. Welches war der wichtigste Auslöser für Ihre Berufswahl? Bitte geben Sie jeder folgenden Angaben „Noten“ von 1 (sehr wichtig für mich) bis 5 (überhaupt nicht wichtig für mich). (Fügen Sie bitte eventuell Fehlendes hinzu.).

hohes Einkommen	
interessante Arbeit	
Aufstiegsmöglichkeiten	
Nähe des Arbeitsplatzes	
gute Unterstützung, Altersversorgung usw.	
Möglichkeit zu selbständigen Arbeiten	
angenehmes Arbeitsklima	
Personalverantwortung	
vereinbar mit Familie	
Möglichkeit, kreativ zu sein und das Ergebnis der eigenen Arbeit zu sehen	

14. Wer hat Ihre ursprünglich Berufswahl beeinflusst?

	sehr stark	ziemlich stark	etwas	wenig	nicht
Vater					
Mutter					
Geschwister					
Freunde					
Schule					
Staatliche Einrichtungen					
Parteifunktionäre					
andere Organisationen (Kirche usw.)					
Vorbilder in den Medien					
andere (bitte ausfüllen)					



### Sektion D: Persönlich Data

Zum Ende noch ein paar persönliche Fragen an Sie:

1. Wie alt sind Sie (in ganzen Jahren)?
2. Wie alt waren Sie, als Sie zum ersten Mal Ihre Menstruation hatten?
3. Wie alt waren Sie, als Sie Ihren ersten Freund hatten?
4. Wie alt waren Sie, als Sie mit ein Partner das erste Mal zusammenlebten?
5. Waren Sie, oder sind Sie verheiratet, oder wohnen Sie mit einem Partner zusammen?
6. Haben Sie Kinder?

### Sektion E: Zusätzliche Mitteilungen

Bitte benutzen Sie diese und die folgende Seite für persönliche Mitteilungen über die Arbeitserfahrungen in Ihrem Leben. Welche davon waren besonders gut oder schlecht und warum ?

**Bitte legen Sie den Fragebogen in den beiliegenden Umschlag und schicken ihn zurück. Vielen Dank für Ihre Kooperation.**

### **Acknowledgement**

I should like to offer my thanks to my colleagues in the Institute of Developmental Psychology, University of Jena, Germany, for their support and encouragement during this study (see also interview entry at the conclusion of the bibliography). In particular, I should like to thank Professor R. K. Silbereisen for his help and for permission to use the data used for the causal model analyses in Chapter 3. My thanks too to all the women of East and West Germany who participated in the study, without whose participation much of value in the study would be lost.

V.E. Christmas

2002

### **Dedication**

To my husband, Heinrich Best for all his help, support and unstinting encouragement.

To my children Oliver and Tamandra Christmas for their love, faith and understanding, and without whom there would have been no reason for completing this undertaking.